

**Multi-Jurisdictional
Hazard Mitigation Plan:
City of Solana Beach Annex
San Diego County, California
2023**



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1. SECTION ONE: DETERMINE THE PLANNING AREA AND RESOURCES

1.1. Planning Area: City of Solana Beach

Solana Beach is a small city located in southern California in Northern San Diego County. It overlooks the Pacific Ocean to the west from sandstone bluffs. It is bounded on the north by the San Elijo Lagoon and the city of Encinitas. To the east lies the San Dieguito County Park and the County unincorporated area of Rancho Santa Fe. The cities of San Diego and Del Mar and the San Dieguito Lagoon form the southern boundary.

Its primary access routes include Interstate 5, Highway 101, Lomas Santa Fe Drive, and Via de la Valle. The City is home to a train station that serves both Amtrak and the Coaster, one of only three in San Diego County.

2. SECTION TWO: BUILD THE PLANNING TEAM

2.1. Planning Participants

The following City Employees contributed toward the development of this Annex:

City Manager's Office

Dan King, Assistant City Manager

Rimga Viskanta, Senior Management Analyst

Patricia Letts, Administrative Assistant III

Community Development Department

Joseph Lim, Director of Community Development

Engineering and Public Works Department

Mo Sammak, City Engineer

Dan Goldberg, Principal Engineer

2.2. Planning Process

A Hazard Mitigation Working Group (HMWG) was established by the County of San Diego to facilitate the development of the Plan. Representatives from each incorporated city, special district and the unincorporated county were designated by their jurisdiction as the HMWG member. Each HMWG member identified a Local Mitigation Planning Team and the City of Solana Beach Local Mitigation Team is identified above in section 2.1.

This team assisted in identifying the specific hazards/risks that are of greatest concern to the City of Solana Beach and to prioritize hazard mitigation measures. The HMWG members met as-needed and then brought this information to HMWG meetings held regularly to provide jurisdiction-specific input to the multi-jurisdictional planning effort and to assure that all aspects of each jurisdiction's concerns were addressed. All HMWG members were provided an overview of hazard mitigation planning elements at the HMWG meetings. This training was designed after the FEMA State and Local Mitigation Planning How-to Guide worksheets, which led the HMWG members through the process of defining the jurisdiction's assets, vulnerabilities, capabilities, goals and objectives, and action items. Preliminary goals, objectives and actions developed by jurisdiction staff were then reviewed with their respective City Council, City Manager and/or representatives for approval.

3. SECTION THREE: CREATE AN OUTREACH STRATEGY

The City of Solana Beach did not conduct a separate outreach strategy for this Hazard Mitigation Plan Annex. Rather, the measures identified have been vetted through the development of other City Plans such as the General Plan and Climate Action Plan. Instead, the City relied on the County's public outreach strategy for the totality of the Hazard Mitigation Plan including all annexes (see the *San Diego County Multi-Jurisdictional Hazard Mitigation Plan's* Section Three for details about the county-wide outreach strategy).

4. SECTION FOUR: REVIEW

COMMUNITY CAPABILITIES

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities, and are outlined in the sections that follow.

4.1. Capability Assessment

The primary types of capabilities for reducing long-term vulnerability through mitigation planning are:

- Planning and regulatory
- Administrative and technical
- Financial
- Education and outreach

The City of Solana Beach can expand on and improve its existing policies and programs in each of the capability categories listed above, through additional research regarding vulnerabilities, further input and meetings from city departments, applying for grant funding, and additional community outreach efforts.

4.1.1. Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Overall, this jurisdiction can expand upon these capabilities by creating and applying an updated five-year Multi-Jurisdictional Hazard Mitigation Plan Cycle and Work Plan along with the addition of more funding opportunities for applicable staff, research, plan developments/projects, and applicable resources/expenses. Further, future opportunities for planning and regulatory enhancement would focus on implementing improvements in energy use and safety in the City. Additional efforts will also be made to incorporate references from the MJHMP in any future plan updates.

Please indicate which of the following your jurisdiction has in place:

Plans	Yes/No Year	Does the plan address hazards?
		Does the plan identify projects to include in the mitigation strategy?
		Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2014	Yes. The Safety Element portion identifies hazards. Yes, It outlines goals, objectives and policies to address these hazards, so it may be used to guide mitigation actions, but no specific projects are identified.
Capital Improvements Plan	Yes Annually	Yes, the Capital Improvement Plan is part of the City's Work Plan. Yes, Capital Improvement projects are identified in the Council Work Plan and budget document. Yes, These documents can be used to implement any mitigation actions that may be identified.
Economic Development Plan	Yes 2014	Yes, The Economic Development Element is part of the City's General Plan. No, It does not address hazards nor mitigation.
Local Emergency Operations Plan	Yes 1996	Yes, as of September 2021, the plan is in the process of being updated.
Continuity of Operations Plan	No	As of September 2021, the plan is in the process of being created.
Transportation Plan	Yes 2014	The Circulation Element of the General Plan address transportation issues and identifies related goals and policies. No, It does not address hazards nor mitigation.
Stormwater Management Plan	Yes 2017	Yes, Jurisdictional Runoff Management Program (JRMP) to comply with NPDES permit requirements. Focus is on water quality management, not on hazard mitigation specifically.
Community Wildfire Protection Plan	No	
M. Real estate disclosure requirements	N/A	None that are mandated by the City.
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	Yes 2017, 2020	Climate Action Plan including Adaptation Plan (amended in 2020).

Building Code, Permitting, and Inspections	Yes/No	Are codes adequately enforced?
Building Code	Yes	Yes Version/Year: 2022 California Building Standards Code; Title 24 2021 International Fire Code; 2022 California Fire Code
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	Score:
Fire department ISO rating	Yes	Rating: 1
Site plan review requirements	Yes	Yes The fire department and other departments review site plans for code compliance.
Land Use Planning and Ordinances	Yes/No	Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	Yes
Subdivision ordinance	Yes	Yes
Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Yes	Yes The City has adopted the CalFire VHFHSZ maps and utilizes CBC Chapter 7A for building requirements within these zones. The City has various ordinances and municipal codes that require the special requirements.
Flood insurance rate maps	Yes	Yes
Acquisition of land for open space and public recreation uses	Yes	
Other		
How can these capabilities be expanded and improved to reduce risk?		
<i>This jurisdiction can expand and enhance these capabilities by continuing to collaborate with partners and participating/staying informed of update related to JRMP, Climate Action Plan, Capital Improvement Plan, and the above listed elements of the Comprehensive/Master/General Plan.</i>		

TABLE 1: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA.

4.1.2. Administrative and Technical

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

The table below describes the capabilities within the City of Solana Beach. Because the City is small, it relies upon consultant services to augment any staffing gaps.

Administration	Yes/No	Describe capability Is coordination effective?
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	The City's Engineers and Planners work in coordination with each other to effectively review land development in the City.
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	City Engineer and Building Official are trained in construction practices related to buildings and or infrastructure.
Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Yes	Planners, Engineers, and Building Officials all have an understanding of the natural and/or manmade hazards as they could relate to the City.
Mitigation Planning Committee	Yes	Ad hoc committee formed to develop Hazard Mitigation Plan in coordination with County efforts.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Yes	Under Public Works, the City does have a maintenance program for trimming trees in the public Right-of-Way, parks and City-owned facilities. The City is not responsible for privately owned and maintained trees. The Public Works Department also perform annual and as-needed storm drain maintenance and cleaning.
Mutual aid agreements	Yes	The Public Works department is part of the Countywide Public Works MOA. The Fire Department is part of several MOAs.
Staff or Under Contract	Yes/No	Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?
Chief Building Official	Yes	Yes, the position is contracted through professional service agreement with the City
Floodplain Administrator	Yes	City Engineer

	PT -1*	*Part of other duties as assigned to full-time position
Emergency Manager	Yes PT-3*	City Manager, Assistant City Manager and Fire Chief *Part of other duties as assigned to full-time position
Surveyors	Yes	Yes, the position is contracted through professional service agreement with the City
Staff with education or expertise to assess the community's vulnerability to hazards	Yes	Some Engineering and Planning Staff can assess local hazards, but we rely on outside geotechnical consultants and others for definite reports and assessments.
Community Planner	Yes FT-3	Community Development Department
Scientists familiar with the hazards of the community	Yes	Consultants available as-needed for specific projects or issues.
Civil Engineer	Yes FT-3	Engineering Department
Personnel skilled in GIS and/or HAZUS	Yes	No Staff dedicated, but some Staff have GIS experience.
Grant writers	Yes	As part of their regular duties, some Staff in each department also write grants.
Other	Yes	Code Compliance Officers
Technical	Yes/No	Describe capability Has capability been used to assess/mitigate risk in the past?
Warning systems/services (Reverse 911, outdoor warning signals)	Yes	AlertSanDiego for Reverse 911 operations. Wireless Emergency Alerts (WEA) for emergency notifications. Traffic message boards with ability to be posted throughout City. All, but WEA, have been used to mitigate risks from hazards in the past.
Hazard data and information	Yes	Previous regional hazard data and information has been used to identify and mitigate risks in the past.
Grant writing	Yes	Personnel from various departments are assigned to writing grants for their departments. These are other duties as assigned to full-time positions. A contractor is also used through City Manager's Office on an as needed basis.
Hazus analysis	Yes	FEMA Hazus Program has been used to identify and mitigate risks in the past.

Other		
How can these capabilities be expanded and improved to reduce risk?		
<i>Future enhancements may include forming a mitigation planning steering committee to foster inter-departmental collaboration, decrease duplication of hazard mitigation efforts, and prioritize and monitor progress on local hazard mitigation actions.</i>		

TABLE 2:FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

4.1.3. Financial

The City of Solana Beach has access to or is eligible to use the following funding resources for hazard mitigation:

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Community Development Block Grants (CDBG)	Yes	Engineering and Planning Department have utilized, primarily for sidewalks and curbs. Assistance that's available for non-entitlement cities. Not likely for the type of hazards the City faces and the areas where the funds can be used.
Capital improvements project funding	Yes	Yes, through City Budget process. Yes
Authority to levy taxes for specific purposes	Yes, Vote Required	Previous mitigation measures and available for future mitigation actions if needed.
Fees for water, sewer, gas, or electric service	Yes	The City collect fees for sewer. Water, gas, and electric are managed by other agencies.
Impact fees for homebuyers or developers for new developments/homes	Yes	Departments collect impact fees based on a fee schedule that applies to new construction. Funding could be applied to past and future mitigation actions if needed. .
Incur debt through general obligation bonds	Yes	Previous mitigation measures and available for future mitigation actions if needed
Incur debt through special tax and revenue bonds	Yes, Vote Required	Previous mitigation measures and available for future mitigation actions if needed.
Incur debt through private activity bonds	Yes	Previous mitigation measures and available for future mitigation actions if needed.

How can these capabilities be expanded and improved to reduce risk?
<i>Projects within the City often require grant funding to reach completion. Future enhancements may include improved staffing levels to increase capacity to pursue grant funding opportunities for hazard mitigation. This may include a position dedicated to grant writing and management for the City's Finance Department.</i>

TABLE 3: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

4.1.4. Education and Outreach

The following education and outreach programs and methods are already in place and could be used to implement mitigation activities and communicate hazard-related information:

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc.	Yes	Community Emergency Response Team (CERT) The City's Climate Action Commission is focused on environmental protection and climate adaptation which includes a focus on hazard mitigation strategies.
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes	Fire safety public education is provided by Fire Department. Other education occurs through website and electronic city communications and print materials at the counter.
Natural disaster or safety related school programs	Yes	The Fire Department offers disaster and safety programs to local schools as requested.
StormReady certification	No	
Firewise Communities certification	No	
Public-private partnership initiatives addressing disaster-related issues	No	
How can these capabilities be expanded and improved to reduce risk?		
<i>Future enhancements may include increased public involvement and focused outreach to under-represented and special-interest groups through social media and website posts, promotional materials, community education, and advertisements to share information on local hazard mitigation activities.</i>		

TABLE 4: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

4.2. Safe Growth Audit

The City's growth guidance instruments provide adequate considerations to reduce hazard vulnerability due to future development:

Comprehensive Plan	Yes/No
Land Use	
1. Does the future land-use map clearly identify natural hazard areas?	Yes
See Public Safety Element of City's General Plan	
2. Do the land-use policies discourage development or redevelopment within natural hazard areas?	Yes
See Public Safety Element of City General Plan	
3. Does the plan provide adequate space for expected future growth in areas located outside natural hazard areas?	Yes
The City's Housing Element of the City General Plan has adequate sites for RHNA numbers	
Transportation	
1. Does the transportation plan limit access to hazard areas?	Yes
The City's Circulation Element of the City General Plan and transportation plans rely on existing network of roadway connections that facilitates pedestrian and vehicular access throughout the city including Cedros shopping area, public beach, and trails while limiting access to environmentally sensitive and hazardous areas. Further the Safety Element of the General Plan references circulation element.	
2. Is transportation policy used to guide growth to safe locations?	Yes
The City's General Plan reflects transportation policies and desired protection for the public health and safety that are considered when considering growth to safe locations.	
3. Are movement systems designed to function under disaster conditions (e.g., evacuation)?	Yes
Environmental Management	
1. Are environmental systems that protect development from hazards identified and mapped?	Yes
The City's General Plan maps the environmentally sensitive locations within the City.	
2. Do environmental policies maintain and restore protective ecosystems?	Yes
The City's General Plan policies protect the environmentally sensitive locations within the City.	
3. Do environmental policies provide incentives to development that is located outside protective ecosystems?	Yes

TABLE 5: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.2 DATA.

Comprehensive Plan (continued)	Yes/No
Public Safety	
1. Are the goals and policies of the comprehensive plan related to those of the FEMA Local Hazard Mitigation Plan?	Yes
The city's general Plan and Local Coastal Program are consistent with the goals and policies of the FEMA Local Hazard Mitigation Plan	
2. Is safety explicitly included in the plan's growth and development policies?	Yes
Protection of the public health, safety and general welfare is a primary objective and component of the City's General Plan, Local Coastal Program and Municipal Code.	
3. Does the monitoring and implementation section of the plan cover safe growth objectives?	Yes
Safe Growth and assured protection of the public health, safety, and general welfare is a primary objective and component of the City's General Plan, Local Coastal Program, and Municipal Code.	
Zoning Ordinance	
1. Does the zoning ordinance conform to the comprehensive plan in terms of discouraging development or redevelopment within natural hazard areas?	Yes
The location of new development outside of hazardous areas is a required regulatory standard as reflected by the City's General Plan, Local Coastal Program and Municipal Code.	
2. Does the ordinance contain natural hazard overlay zones that set conditions for land use within such zones?	Yes
The City's Municipal Code Title 17 Zoning covers the locations at risk of natural hazards and explicitly either prohibits new development or identifies how new development may be conditionally approved via a discretionary permit process and subject to conditions of approval.	
3. Do rezoning procedures recognize natural hazard areas as limits on zoning changes that allow greater intensity or density of use?	Yes
The city's General Plan, Local Coastal Plan, and Municipal Code identify policies, regulations, and permit approval procedures that effectively provide for decision makers to limit zoning changes, as appropriate within natural hazard areas, including proposed changes that would allow greater intensity or density. Requested zoning changes require processing of legislative approvals through a public process via the Planning Commission and City council. Following local adoption, the proposed zoning amendments require further processing via the California Coastal Commission for final certification approval to become effective. Consistency with the Coastal Act environmental protections and provisions for minimization of hazard risk is required to gain final certification approval of any proposed zoning changes.	
4. Does the ordinance prohibit development within, or filling of, wetlands, floodways, and floodplains?	Yes
The City's Local Coastal Program and Municipal Code prohibit the filling of wetlands and new development within the wetlands and floodways. New development within the existing developed areas of the floodplain is required to meet all Federal Floodplain management requirements and additional limitations in accordance with the City's Municipal Code and Local Coastal Program.	
Subdivision Regulations	
1. Do the subdivision regulations restrict the subdivision of land within or adjacent to natural hazard areas?	Yes

The City's subdivision regulations are incorporated in the Municipal Code Title 16. Further, the City's Local Coastal Program regulates proposed subdivisions as "coastal development" subject to approval of a Coastal Development Permit, which is a discretionary permit that requires findings for approval that include environmental projections and assurances to minimize risk of hazards for new development.	
2. Do the regulations provide for conservation subdivisions or cluster subdivisions in order to conserve environmental resources?	Yes
The City's general Plan, Local Coastal Program and Municipal Code identify policies, regulations, and permit approval procedures that provide for development to be clustered to avoid environmentally sensitive resources or hazards. Further, the City utilizes easements as a condition of approval where appropriate, to reserve areas as sensitive areas as open space or building restricted as necessary to ensure sensitive environmental resources are protected and conserved in perpetuity.	
3. Do the regulations allow density transfers where hazard areas exist?	Yes
Capital Improvement Program and Infrastructure Policies	
1. Does the capital improvement program limit expenditures on projects that would encourage development in areas vulnerable to natural hazards?	Yes
The City reviews CIP each year as part of its Work Plan. The projects take into consideration areas vulnerable to natural hazards to minimize the risks.	
2. Do infrastructure policies limit extension of existing facilities and services that would encourage development in areas vulnerable to natural hazards?	Yes
The City reviews CIP each year as part of its Work Plan. The projects take into consideration areas vulnerable to natural hazards to minimize the risks	
3. Does the capital improvement program provide funding for hazard mitigation projects identified in the FEMA Mitigation Plan?	No
Other	
1. Do small area or corridor plans recognize the need to avoid or mitigation natural hazards?	Yes
The City's Municipal Code and General Plan recognize the need to avoid or mitigate natural hazards. Specific identifications are outlined in the Safety Element of the General Plan.	
2. Does the building code contain provisions to strengthen or elevate construction to withstand hazard forces?	Yes
The City's Safety Element of the General Plan, Local Coastal Program and Municipal Code, including California Building Codes, include policies and regulations applicable to construction requiring provisions for flood proofing or elevation of new construction to withstand hazard forces (such as flooding).	
3. Do economic development or redevelopment strategies include provisions for mitigation natural hazards?	N/A
The City's General Plan, Local Coastal Program, and Municipal Code include provisions to facilitate and require mitigation and reduction of risk of natural hazard.	
4. Is there an adopted evacuation and shelter plan to deal with emergencies from natural hazards?	Yes

TABLE 6: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.2 DATA CONTINUED.

Questions were adapted from Godschalk, David R. *Practice Safe Growth Audits, Zoning Practice, Issue Number 10, October 2009, American Planning Association.*

4.2.1. Growth and Development

The City of Solana Beach incorporated in 1986. Below is the change in population since incorporation:

Year	Population	Change	% Change
1990*	12,962	---	--%
2000	12,979	17	.13%
2010	12,867	-112	-.87%
2020	12,941	74	.58%

Source: US Census Bureau, California Department of Finance E-1 Report (2020)

*City of Solana Beach incorporated in July 1986, however population data is not available for the City in that year.

The City of Solana Beach is primarily land locked due to boundaries with other jurisdictions. These development constraints have led to increased infill development with the City. New development does not extend City boundaries, it is re-utilizing existing real estate within the City limits.

4.2.2. Development since 2018 Plan

Development Services tracked total building permits issued since the 2018 plan. A summary of this development is shown in table below:

Property Use	2019	2020	2021
Residential	019	084	099
Commercial	004	023	023
Total	023*	107	122

Source: City of Solana Beach Community Development Department

*City of Solana Beach Community Development Department implemented a new permit tracking method in later 2019 effecting the data available for 2018 and early 2019.

Development is also tracked if built in the identified hazard areas, which includes the 1% annual chance floodplain and the high and very high fire hazard severity zone (VHFHSZ). All development in the identified hazard areas were completed in accordance with all current and applicable development codes and standards and should be adequately protected. Thus, with the exception of more people living in the area potentially exposed to natural hazards, this growth should not cause a significant change in vulnerability of the City to identified priority hazards. A summary of development in hazard zones since 2018 is shown in the table below:

Property Use	VHFHSZ
Residential	43
Non-Residential	0
Total	43

Source: City of Solana Beach Community Development Department

4.3. National Flood Insurance Program (NFIP)

As a participant in the National Flood Insurance Program (NFIP), a community develops capabilities for conducting flood mitigation activities. This program provides flood insurance for structures located within the floodplain areas in the city and as designated by FEMA. The City of Solana Beach coordinates with FEMA to ensure their program remains current.

The City also has a Municipal Code (Chapter 17.80; FLOOD DAMAGE PREVENTION OVERLAY ZONE). This ordinance references the Federal Flood Insurance Rate Maps and its purpose is to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land within flood-prone, mudslide or flood-related erosion areas. The ordinance designates the City Engineer as the Floodplain Administrator to implement the chapter by granting, conditionally granting, or denying flood damage prevention development permits in accordance with its provisions.

The City of Solana Beach has been and continues to be a participant in FEMA's National Flood Insurance Program (NFIP).

NFIP Topic	Source of Information	Comments
Insurance Summary		
How many NFIP policies are in the community? What is the total premium and coverage?	State NFIP Coordinator or FEMA NFIP Specialist	One
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	FEMA NFIP or Insurance Specialist	Zero
How many structures are exposed to flood risk within the community?	Solana Beach Overlay Map found on city website.	<20 in the floodplain overlay zone.
Describe any areas of flood risk with limited NFIP policy coverage	N/A	N/A
Staff Resources		
Is the Community FPA or NFIP Coordinator certified?	N/A	No
Is floodplain management an auxiliary function?	SBMC 17.80	Yes
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	SBMC 17.80	Permit review and engineering capability.

What are the barriers to running an effective NFIP program in the community, if any?	N/A	N/A
Compliance History		
Is the community in good standing with the NFIP?	https://www.fema.gov/cis/CA.html	Yes
Are there any outstanding compliance issues (i.e., current violations)?	https://www.fema.gov/cis/CA.html	No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	Ordinance 507	In 2019 prior to most recent flood management code update
Is a CAV or CAC scheduled or needed?	N/A	No
Regulation		
When did the community enter the NFIP?	Community Status Book http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book	06/03/1988 Initial FIRM identified
Are the FIRMs digital or paper?	N/A	Digital
Do floodplain development regulations meet or exceed FEMA or State minimum requirements?	SBMC 17.80	Meet
Provide an explanation of the permitting process.	SBMC 17.80	Process outlined in SBMC 17.80.090.
Community Rating System (CRS)		
Does the community participate in CRS?	Community FPA, State, FEMA NFIP	No
What is the community's CRS Class Ranking?	N/A	N/A
What categories and activities provide CRS points and how can the class be improved?	N/A	N/A
Does the plan include CRS planning requirements	N/A	N/A

TABLE 7: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.3 DATA.

5. SECTION FIVE: CONDUCT A RISK ASSESSMENT

The planning team conducted a risk assessment to determine the potential impacts of hazards to the people, economy, and built and natural environments of the community. The risk assessment provides the foundation for the rest of the mitigation planning process, which is focused on identifying and prioritizing actions to reduce risk to hazards.

In addition to informing the mitigation strategy, the risk assessment also can be used to establish emergency preparedness and response priorities, for land use and comprehensive planning, and for decision making by elected officials, city and county departments, businesses, and organizations in the community.

5.1. Hazards Summary

The table below summarizes hazard description information and identifies which hazards are most significant to the planning area. After reviewing the hazards and their overall significance ranking, the following priority hazards were identified by the planning group as significant to mitigate against. A brief rationale for including each of these is included.

- **Earthquake:** proximity to local faults
 - **Likely:** 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
 - **High:** The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.
- **Rising or High-Water Events:** constant and historical
 - Flood
 - Sea Level Rise
 - Storm Surge
 - Tsunami (proximity to Pacific Ocean)
- **Extreme Heat:** increasing temperatures due to climate change
- **Drought:** decreased rainfall in recent years
- **Wildfire:** climate and location
- **Erosion/Landslide:** coupled with earthquake/tsunami

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Avalanche	Negligible	Weak	Unlikely	Low
Dam Failure	Negligible	Moderate	Unlikely	Low
Drought	Extensive	Moderate	Likely	Medium
Earthquake	Extensive	Severe	Likely	High
Erosion	Limited	Severe	Likely	Medium
Expansive Soils	Negligible	Weak	Unlikely	Low
Extreme Cold	Negligible	Weak	Unlikely	Low
Extreme Heat	Extensive	Moderate	Likely	Medium
Flood	Negligible	Moderate	Unlikely	Low
Hail	Negligible	Weak	Unlikely	Low
Hurricane	Negligible	Weak	Unlikely	Low
Landslide	Limited	Moderate	Likely	Medium
Lightning	Negligible	Weak	Occasional	Low
Sea Level Rise	Negligible	Weak	Likely	Medium
Severe Wind	Negligible	Weak	Occasional	Low
Severe Winter Weather	Negligible	Weak	Unlikely	Low
Storm Surge	Limited	Moderate	Unlikely	Medium
Subsidence	Negligible	Weak	Unlikely	Low
Tornado	Negligible	Weak	Unlikely	Low
Tsunami	Limited	Moderate	Unlikely	Medium
Wildfire	Limited	Moderate	Likely	Medium

TABLE 8: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 5.1 DATA.

Definitions for Classifications

Location (Geographic Area Affected)

- **Negligible:** Less than 10 percent of planning area or isolated single-point occurrences

- **Limited:** 10 to 25 percent of the planning area or limited single-point occurrences
- **Significant:** 25 to 75 percent of planning area or frequent single-point occurrences
- **Extensive:** 75 to 100 percent of planning area or consistent single-point occurrences

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

- **Weak:** Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little to no damage
- **Moderate:** Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days
- **Severe:** Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months
- **Extreme:** Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions

Hazard	Scale / Index	Weak	Moderate	Severe	Extreme
Drought	Palmer Drought Severity Index ³	-1.99 to +1.99	-2.00 to -2.99	-3.00 to -3.99	-4.00 and below
Earthquake	Modified Mercalli Scale ⁴	I to IV	V to VII	VII	IX to XII
	Richter Magnitude ⁵	2, 3	4, 5	6	7, 8
Hurricane Wind	Saffir-Simpson Hurricane Wind Scale ⁶	1	2	3	4, 5
Tornado	Fujita Tornado Damage Scale ⁷	F0	F1, F2	F3	F4, F5

Probability of Future Events

- **Unlikely:** Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
- **Occasional:** 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- **Likely:** 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
- **Highly Likely:** 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

Overall Significance

- **Low:** Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.

- **Medium:** The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.
- **High:** The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

- Cumulative meteorological drought and wet conditions: <http://ncdc.noaa.gov/>
- Earthquake intensity and effect on population and structures: <http://earthquake.usgs.gov>
- Earthquake magnitude as a logarithmic scale, measured by a seismograph: <http://earthquake.usgs.gov>
- Hurricane rating based on sustained wind speed: <http://nhc.noaa.gov>
- Tornado rating based on wind speed and associated damage: <http://spc.noaa.gov>

In addition, the County provided the City of Solana Beach with some data to complete the table below.

***Summary of Potential Hazard-Related
Exposure/Loss in Solana Beach**

		Residential		Commercial		Critical Facilities	
Hazard Type	Exposed Population	Number of Residential Buildings	Potential Exposure/Loss for Residential Buildings (x\$1,000)	Number of Commercial Buildings	Potential Exposure/Loss for Commercial Buildings (x\$1,000)	Number of Critical Facilities	Potential Exposure for Critical Facilities (x\$1,000)
Coastal Storm / Erosion	1,260	0	\$0	0	\$0	0	0
Sea Level Rise	470	0	0	0	0	0	0
Dam Failure	206	332	129,015,200	13	3,930,550	0	0
Earthquake (Annualized Loss - Includes shaking, liquefaction and landslide components)	353	136	63,606,558	109	38,851,975	0	0
Flood (Loss)							
100 Year	656	313	121,631,800	11	3,325,850	1	6,670,000
500 Year	1,022	509	197,797,400	57	17,233,950	1	6,670,000
Rain-Induced Landslide							
High Risk	0	0	0	0	0	0	0
Moderate Risk	0	0	0	0	0	0	0
Tsunami	1,441	0	0	0	0	0	0

Fire							
Very High Risk	2,538	579	224,999,400	25	7,558,750	0	0
High Risk	954	505	196,192,500	15	4,535,250	1	24,864,000
Rose Canyon M6.9 Scenario	353	136	\$63,606,558	109	\$38,851,975	5	\$47,920,000

* Data provided by the County of San Diego.

5.2 Hazard Profiles

A hazard profile is a description of the physical characteristics of a hazard and a determination of various hazard descriptors, including magnitude, duration, frequency, probability and extent. The City of Solana Beach has incorporated the hazard data that was collected and mapped in the hazard identification process by the County of San Diego in its Base Plan. The hazard profile information below is incorporated, in relevant part, from the San Diego County Base Plan.

Most hazards were given a risk level of high, medium, or low depending on several factors unique to the hazard. The priority hazards identified and profiled for City of Solana Beach, as well as the data used to profile each hazard are presented in this section. The hazards are presented in alphabetical order; and this does not signify level of importance.

The final list of high-ranking priority hazards to be profiled for City of Solana Beach was determined as Drought, Earthquake, Erosion/Landslide, Extreme Heat, Rising or High-Water Events (Flooding, Sea Level Rise, Storm Surge, Tsunami), and Wildfire.

5.2.1 Drought

Nature of Hazard

Warming temperatures statewide could result in reduced water supply for the San Diego region, which includes the City of Solana Beach. The State Water Project and Colorado River provide 75% to 95% of the water supply for the San Diego region, depending on the year. Both of these water supplies originate in mountain snowpack. Over the past 50 years across most of the Southwest, there has been less late-winter precipitation falling as snow, earlier snowmelt, and earlier arrival of most of the year's streamflow. Projections of further warming will result in reduced snowpack, which could translate into reduced water supply for the San Diego region's cities, agriculture, and ecosystems. In fact, studies indicate that San Diego's sources of water could shrink by 20 percent or more by 2050. An additional threat to water supply is the vulnerability of the levees protecting the California Delta, which feeds the State Water Project. According to the California Adaptation Planning Guide, jurisdictions in the San Diego region must carefully consider the vulnerability of their water supply.

Local water managers also report that higher temperatures could lead to increased demand for water for irrigation. Water shortages could become more frequent and more severe in the future,

straining the local economy. The potential for drought in Solana Beach is “Likely.” The desalinization plant in Carlsbad slightly off-sets that potential. The plant, designed to produce 50 million gallons per day, was estimated to provide 8% of the regions water resources by 2020.

A U.S. Drought Monitor, using the Palmer Drought Severity Index, can be found at <http://droughtmonitor.unl.edu/>.

Disaster History

The depression era drought of 1929-1934 was the worst drought in California’s history. Its impact was felt statewide. At that time, San Diego was self-sufficient, relying on local water supplies. The region would not begin to import water until 1947.

The drought of 1987-1992 was extremely severe and resulted in the Metropolitan Water District ordered a 50% reduction in water use. The San Diego County Water Authority considered banning outdoor water use. The rains of “Miracle March” in 1991 replenished rivers, reservoirs, and the Sierra snowpack.

A drought occurred in 2007 and lasted until 2011. Then, another drought began in 2012 just ended in 2017, following a series of winter storms that brought heavy rainfall to the state. The proclamation was extended again on July 8, 2021, amid deepening drought and record-breaking temperatures. The Governor requested Californians to voluntarily reduce water use by 15% to protect water reserves if drought conditions continue.

On April 21, 2021, California Governor Newsom, proclaimed a drought emergency, which enables state response to water supply shortfalls where conditions are extremely dry. This drought emergency proclamation was expanded to include new counties on May 10, 2021. By October 19, 2021, the Governor expanded the drought emergency proclamation to include San Diego County and seven other counties, which were the last of the 58 California counties to be included in the drought emergency proclamation.

On March 28, 2022, the Governor prompted local water suppliers, at the local level, to move to Level 2 of their Water Shortage Contingency Plans, which “requires locally appropriate actions that will conserve water across all sectors, and he directed the State Water Resources Control Board to consider a ban decorative watering at businesses and institutions. Although key improvements have been made since 2016, California is still experiencing drought conditions.

As extreme drought periods become more frequent, the increase in slow, or chronic drought periods can cause long term and indirect health effects. Potential health effects include “compromised quantity and quality of drinking water, increased recreational risks, effects on air quality, diminished living conditions related to energy, air quality, and sanitation and hygiene, mental health effects related to economic and job losses, compromised food and nutrition and increased incidence of illness and disease” (Centers for Disease Control, 2022).

Location & Extent/Probability of Occurrence & Magnitude

Since California is still experiencing drought conditions as of 2022, the probability of occurrence is “Likely”.

Climate Change Considerations

Although there is a lot of variability, projections indicate that there will be longer and more frequent drought that will be punctuated by extreme precipitation. The evaporative demand (atmospheric thirst) is an important component in driving the extent of future droughts (McEvoy et al, 2020).

Drought can increase wildfire risk and lead to fine fuel regrowth after a fire. This type of vegetation is more susceptible to fires, creating a feedback.

Extreme drought has the potential to intensify and change community composition and structure of ecosystems. Drought has severe consequences because it operates at spatial scales larger than other disturbances such as fire (Jennings et al., 2018).

The highest priority mitigation actions to reduce Climate Change impacts on this hazard should include water supply reliability that originates from a diversity of water supplies and conservation planning that addresses the impacts of drought on ecosystems.

5.2.2 Earthquake

Nature of the Hazard

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake.

When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can further amplify ground motions. The severity of these effects is dependent on the amount of energy released from the fault or epicenter. One way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. The acceleration due to gravity is often called "g". A 100% g earthquake is very severe.

More damage tends to occur from earthquakes when ground acceleration is rapid. Peak ground acceleration (PGA) is a measure of the strength of ground movement. PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity (980 cm/sec/sec). PGA is used to project the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (10%, 5%, or 2%) of being exceeded in 50 years. These ground motion values are used for reference in construction design for earthquake resistance. The ground motion values can also be used to assess relative hazard between sites, when making economic and safety decisions.

Another tool used to describe earthquake intensity is the Richter scale. The Richter scale was devised as a means of rating earthquake strength and is an indirect measure of seismic energy released. The scale is logarithmic with each one-point increase corresponding to a 10-fold increase in the amplitude of the seismic shock waves generated by the earthquake. In terms of actual energy released, however, each one-point increase on the Richter scale corresponds to about a 32-fold increase in energy released. Therefore, a magnitude (M) 7 earthquake is 100 times (10×10) more powerful than a M5 earthquake and releases 1,024 times (32×32) the energy. An earthquake generates different types of seismic shock waves that travel outward from the focus or point of rupture on a fault. Seismic waves that travel through the earth's crust are called body waves and are divided into primary (P) and secondary (S) waves. Because P waves move faster (1.7 times) than S waves they arrive at the seismograph first. By measuring the time delay between arrival of the P and S waves and knowing the distance to the epicenter, seismologists can compute the Richter scale magnitude for the earthquake.

The Modified Mercalli Scale (MMI) is another means for rating earthquakes, but one that attempts to quantify intensity of ground shaking. Intensity under this scale is a function of distance from the epicenter (the closer to the epicenter the greater the intensity), ground acceleration, duration of ground shaking, and degree of structural damage. This rates the level of severity of an earthquake by the amount of damage and perceived shaking, as displayed in the table below:

MMI Value	Description of Shaking Severity	Summary Damage Description used on 1995 Maps	Full Description
I			Not Felt
II			Felt by persons at rest, on upper floors, or favorably placed
III			Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV			Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motorcars rock. Windows, dishes, doors rattle. In the upper range of IV, wooden walls and frames creak.
V	Light	Pictures Move	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clock stop, start, change rate.
VI	Moderate	Objects Fall	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry cracked

VII	Strong	Nonstructural Damage	Difficult to stand. Noticed by drivers of motorcars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roofline. Fall of plaster, loose bricks, stones, tiles, cornices. Some cracks in masonry C. Small slides and caving in along sand or gravel banks. Concrete irrigation ditches damaged.
VIII	Very Strong	Moderate Damage	Steering of motorcars affected. Damage to masonry C, partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, and elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Cracks in wet ground and on steep slopes.
IX	Very Violent	Extreme Damage	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments.

**Table 12: Modified Mercalli Scale, taken from the San Diego County's Base Plan*

Several major active faults exist in San Diego County, including the Rose Canyon, La Nacion, Elsinore, San Jacinto, Coronado Bank and San Clemente Fault Zones. The Rose Canyon Fault Zone is part of the Newport-Inglewood fault zone, which originates to the north in Los Angeles, and the Vallecitos and San Miguel Fault Systems to the south in Baja California.

The Rose Canyon Fault extends inland from La Jolla Cove, south through Rose Canyon, along the east side of Mission Bay, and out into San Diego Bay. The Rose Canyon Fault is considered the greatest potential threat to San Diego as a region, including the City of Solana Beach, due to its proximity to areas of high population. The La Nacion Fault Zone is located near National City and Chula Vista. The Elsinore Fault Zone is a branch of the San Andreas Fault System. It originates near downtown Los Angeles and enters San Diego County through the communities of Rainbow and Pala; it then travels in a southeasterly direction through Lake Henshaw, Santa Ysabel, Julian; then down into Anza-Borrego Desert State Park at Agua Caliente Springs, ending at Ocotillo, approximately 40 miles east of downtown.

The San Jacinto Fault is also a branch of the San Andreas Fault System. This fault branches off from the major fault as it passes through the San Bernardino Mountains. Traveling southeasterly, the fault passes through Clark Valley, Borrego Springs, Ocotillo Wells, and then east toward El Centro in Imperial County. This fault is the most active large fault within County of San Diego. The Coronado Bank fault is located about 10 miles offshore. The San Clemente Fault lies about 40 miles off La Jolla and is the largest offshore fault at 110 miles or more in length (Unified San Diego County Emergency Services Organization Operational Area Emergency Plan, 2014).

Disaster History

As stated in the San Diego County base Plan, historic documents record a very strong earthquake struck San Diego on May 27, 1862; damaging buildings in Old Town and opening cracks in the earth near the San Diego River mouth. This destructive earthquake was centered on either the Rose Canyon or Coronado Bank faults and descriptions of damage suggest that it had a magnitude of about 6.0 (M6).

The strongest recently recorded earthquake in San Diego County was a M5.3 earthquake that occurred on July 13, 1986 on the Coronado Bank Fault, 25 miles west of Solana Beach. In recent years there have been several moderate earthquakes recorded within the Rose Canyon Fault Zone as it passes beneath the City of San Diego. Three temblors shook the city of San Diego on 17 June 1985 (M3.9, 4.0, 3.9) and a stronger quake occurred on 28 October 1986 (M4.7) (Demere, SDNHM website 2003). The most recent significant earthquake activity occurred on June 15, 2004 with a M5.3 on the San Diego Trough Fault Zone approximately 50 miles SW of San Diego. It was reported as an IV on the MMI (Southern California Seismic Network).

Location & Extent/Probability of Occurrence & Magnitude

The figures below display the location and extent of the profiled earthquake hazard areas for San Diego County:

This is based on a United States Geological Survey (USGS) earthquake model that shows probabilistic peak ground acceleration for every location in San Diego County, including the City of Solana Beach. Since 1984, earthquake activity in San Diego County has increased twofold over the preceding 50 years (Demere, SDNHM website 2003). All buildings that have been built in recent decades must adhere to building codes that require them to be able to withstand earthquake magnitudes that create a PGA of 0.4 or greater. Ongoing field and laboratory studies suggest the following maximum likely magnitudes for local faults: San Jacinto (M6.4 to 7.3), Elsinore (M6.5 to 7.3), Rose Canyon (M6.2 to 7.0), La Nacion (M6.2 to 6.6), Coronado Bank (M6.0 to 7.7), and San Clemente (M6.6 to 7.7) (Demere, SDNHM website 2003).

Data used to profile earthquake hazard included probabilistic PGA data from USGS and a Scenario Earthquake Shake map for Rose Canyon from the California Integrated Seismic Network (CISN). From these data, the Hazard Mitigation Planning Group (HMPG) determined that risk level for earthquake is determined to be high if an area lies within a 0.3 or greater PGA designation. Earthquakes were modeled using HAZUS-MH, which uses base information to derive probabilistic peak ground accelerations much like the PGA map from USGS that was used for the profiling process.

The potential for an earthquake in the City of Solana Beach is considered “Likely”.

Climate Change Considerations

Not applicable.

5.2.3. Erosion/Landslide

Nature of the Hazard

Coastal erosion is the wearing of coastal land. It is commonly used to describe the horizontal retreat of the shoreline along the ocean and is considered a function of larger processes of shoreline change, which include erosion and accretion. Erosion results when more sediment is lost along a particular shoreline than is deposited by the water body and is measured as a rate with respect to either a linear retreat or volumetric loss. Erosion rates are not uniform and vary over time at any single location. Various locations along the Coast of San Diego County are highly susceptible to erosion. Erosion prevention and repair measures such as installation of seawalls and reinforcement of cliffs have been required in different locations along the San Diego coast in the past. The risk/probability of coastal erosion in the City of Solana Beach is considered “Likely”.

Landslides occur when masses of rock, earth, or debris move down a slope, including rock falls, deep failure of slopes, and shallow debris flows. Landslides are influenced by human activity (mining and construction of buildings, railroads, and highways) and natural factors (geology, precipitation, and topography). Frequently they accompany other natural hazards such as floods, earthquakes, and volcanic eruptions. Although landslides sometimes occur during earthquake activity, earthquakes are rarely their primary cause.

The most common cause of a landslide is an increase in the down slope gravitational stress applied to slope materials (oversteepening). This may be produced either by natural processes or by man's activities. Undercutting of a valley wall by stream erosion or of a sea cliff by wave erosion are ways in which slopes may be naturally oversteeped.

Other ways include excessive rainfall or irrigation on a cliff or slope. Another type of soil failure is slope wash, the erosion of slopes by surface-water runoff. The intensity of slope wash is dependent on the discharge and velocity of surface runoff and on the resistance of surface materials to erosion. Surface runoff and velocity is greatly increased in urban and suburban areas due to the presence of roads, parking lots, and buildings, which have zero filtration capacities and provide generally smooth surfaces that do not slow down runoff.

Mudflows are another type of soil failure and are defined as flows or rivers of liquid mud down a hillside. They occur when water accumulates under the ground, usually following long and heavy rainfalls. If there is no brush, tree, or ground cover to hold the soil, mud will form and flow down-slope.

Disaster History

Coastal erosion is an ongoing process that is difficult to measure but can be seen in various areas along the coastline of San Diego County. While City of Solana Beach has not had significant erosion events, significant coast erosion events have occurred nearby. Unstable cliffs at Beacon's Beach in Encinitas caused a landslide that killed a woman sitting on the beach in January 2000. In 1942, the Self-Realization Fellowship building fell into the ocean because of erosion and slope failure caused by groundwater oversaturated the cliffs it was built on.

Landslides and landslide-prone sedimentary formations are present throughout the coastal plain of western San Diego County. Landslides also occur in the granitic mountains of East San Diego County, although they are less prevalent. Ancient landslides are those with subdued topographic expressions that suggest movements at least several hundred and possibly several thousands of years before present. Many of these landslides are thought to have occurred under much wetter climatic conditions than at present. Recent landslides are those with fresh or sharp geomorphic expressions suggestive of active (ongoing) movement or movement within the past several decades. Reactivations of existing landslides can be triggered by disturbances such as heavy rainfall, seismic shaking and/or grading. Many recent landslides are thought to be reactivations of ancient landslides.

While significant landslides have not occurred in the City of Solana Beach, other areas in San Diego County have experienced landslides, including neighboring Del Mar and Encinitas. Per the County's Base Plan, significant landslides have occurred in: the Otay Mesa area, Oceanside, Mt. Soledad in La Jolla, Sorrento Valley, in the vicinity of Rancho Bernardo and Rancho Penasquitos, along the sides of Mission Gorge (San Carlos and Tierrasanta), western Santee, the Fletcher Hills area of western El Cajon, western Camp Pendleton, and the east side of Point Loma. Some of the more significant historical coastal bluff landslides have occurred along north La Jolla (Black's Beach), Torrey Pines, Del Mar, and Encinitas.

Landslides tend to be more widespread in these areas where the underlying sedimentary formations contain weak claystone beds that are more susceptible to sliding.

Remedial grading and other mitigation measures have stabilized many but not all landslides in urban areas and other developments within San Diego County. Published geologic maps and other sources of information pertaining to landslide occurrence may not differentiate between known or suspected landslides.

Moreover, published landslide maps (such as those used to compile the landslide areas for this effort) are not always updated or revised to reflect landslides that have been stabilized, or in some cases completely removed.

The landslide maps for this study have been compiled for planning and emergency responses preparedness, and the compilation sources may not reflect current or existing conditions.

Location & Extent/Probability of Occurrence & Magnitude

Data used to determine landslide risk were steep slope (greater than 25%), soil series data (SANDAG, based on USGS 1970s series), and soil-slip susceptibility from USGS. Because landslide data in GIS format was not available for the entire county, a model was run using USGS soils and steep slope data to determine landslide risk areas for the entire County. Tan Landslide Susceptibility Maps that depict steep slope areas, landslide formations, and landslide susceptible areas based on a combination of slope, soils and geologic instability were also used in the analysis. As shown in the figure below, the location and extent of landslide hazard areas are generally concentrated along canyons near the coastal areas with steep slopes:

The western portion of the county, which includes the City of Solana Beach, shows the soil-slip susceptibility data, while the eastern portion of the county shows the results of the model used to determine landslide risk for areas that were not included in the soil-slip susceptibility model. Housing development on marginal lands and in unstable but highly desirable coastal areas has increased the threat from landslides throughout San Diego County.

Based on historical occurrences, the potential for an erosion/ landslide is considered “Likely”.

Climate Change Considerations

Post-fire debris flows require high intensity precipitation. Global Climate models do not project hourly rates of precipitation. One study that dynamically downscaled climate projection suggested that hourly precipitation rates in the mountainous area increased in Central and Northern California (Huang et al, 2020), but it did show results over San Diego.

The highest priority mitigation actions to reduce Climate Change impacts on this hazard should include evaluation of vulnerable landscapes, monitoring and educating partners and the public, paying attention to weather forecasts of heavy and prolonged rainfall, especially in conditions when landscape is already soaked, consulting with experts in landslides/debris flows.

5.2.4. Extreme Heat

Nature of the Hazard

Although extreme heat does not cause structural damage like floods, fires, and earthquakes, heat waves claim many lives due to heat exhaustion and heat stroke. According to a California Energy Commission Study, from 1994 to 2009, heat waves have claimed more lives in California than all declared disaster events combined.

Despite this history, not a single heat emergency was formally proclaimed at the state level or as a federal disaster between 1960 and 2008. The author of an account of a heat wave which killed 739 people in Chicago in July 1995 suggests that the hidden nature of social vulnerability combined with the inconspicuous nature of heat events (unlike floods, fires, and earthquakes) prevent them from being declared as legitimate disasters. However, the California State Hazard Mitigation Plan considers extreme heat a legitimate disaster type.

Extreme heat is exacerbated by the “urban heat island effect”, whereby impervious surfaces, such as concrete and asphalt, absorb heat and result in greater warming in urban areas compared to rural areas. Urban heat islands exacerbate the public health impacts that heat waves have upon the more vulnerable populations. San Diego County has among the highest percentages of impervious surfaces in the states, increasing the potential impacts of heat islands. In fact, Southern California’s urban centers are warming more rapidly than other parts of the state.

Extreme heat events put vulnerable populations (such as older adults, children, people who are chronically ill, and people who work outside) at risk of heat-related illnesses and even death. Extreme heat events highlight the importance of thoughtful social vulnerability analysis. For example, socially isolated older adults are especially vulnerable. People who live in urban areas

with high impervious surface coverage and no access to air conditioning are also especially vulnerable.

Extreme heat also has secondary impacts, such as power outages and poor air quality. Heat events, and the increased use of air conditioning, can lead to power outages, which makes the events even more dangerous. Hotter temperatures may also lead to poorer air quality because ozone formation, a component of smog, increases with higher temperatures.

Disaster History

Following the events of 2006, when there was a prolonged period of extreme heat across the state of California, San Diego County developed an Excessive Heat Preparedness and Response Plan.

According to Spatial Hazard Events and Losses Database for the United States (SHELDUS) there have been four extreme heat events in San Diego in the past 18 years resulting in four heat related fatalities and 28 heat related injuries.

Location & Extent/Probability of Occurrence & Magnitude

San Diego is facing an increase in the frequency, duration, and strength of heat waves in the coming decades. While greater warming is expected in inland areas, residents of coastal areas are vulnerable when the temperature spikes, because they are less accustomed to the heat, and they are less likely to have air conditioning.

Research also indicates that heat waves are likely to become more humid in the future and with nighttime temperatures staying high, further stressing public health. Extreme warm temperatures in the San Diego region mostly occur in July and August, but as climate warming takes hold, the occurrences of these events will likely begin in June and could continue to take place into September.

The potential for extreme heat event is considered “Likely”.

Climate Change Considerations

An increase in the intensity, frequency and duration of extreme heat events is expected in the context of climate change. Furthermore, observations have shown, and projections indicate, that the flavor of extreme heat events have and will continue to change with more and more humid heat events (that drive nighttime heat events) (Gershunov et al., 2009, Gershunov et al., 2012).

The highest priority mitigation actions to reduce Climate Change impacts on this hazard should include preparation, with strong attention to weather forecasts and ready social services, infrastructure (e.g. County Cooling Centers), and programs to support installation of air conditioning units in communities lacking access.

5.2.5 Rising or High-Water Events (Flood, Sea Level Rise, Storm Surge, and Tsunami)

Nature of the Hazard

These four hazards were mapped and profiled as a group because many of the factors and risks involved are similar and limited to the coastal areas. Coastal storms can cause increases in tidal elevations (called storm surge), wind speed, and erosion. The most dangerous and damaging feature of a coastal storm is storm surge. Storm surges are large waves of ocean water that sweep across coastlines where a storm makes landfall. Storm surges can inundate coastal areas, wash out dunes, and cause backwater flooding. If a storm surge occurs at the same time as high tide, the water height will be even greater.

With up to two feet of sea level rise projected by 2050, low-lying areas could become inundated more frequently and with increasingly higher water levels. In addition, storm related flooding may reach further inland and occur more often. Beaches and cliffs could also see increased erosion as they are exposed to more hours of high sea levels and wave action. The NOAA Sea Level Rise Viewer allows for planners to predict the impact of sea level rise over the next several decades. It can be found at <https://coast.noaa.gov/digitalcoast/tools/slr>.

According to the Sea Level Rise Adaptation Strategy for the San Diego Bay, the sectors that are most vulnerable to sea level rise are storm water, wastewater, shoreline parks, transportation facilities, commercial buildings, and ecosystems. Low-lying communities, such as Imperial Beach, Coronado, Mission Beach, and parts of La Jolla Shores, Del Mar, and Oceanside may be particularly vulnerable to sea level rise. In addition, some of San Diego's military installations and the region controlled by the Port of San Diego may also be affected. However, sea level rise is considered (on a scale of low, medium, high, very high) a low hazard for the region.

A tsunami is a series of long waves generated in the ocean by a sudden displacement of a large volume of water. Underwater earthquakes, landslides, volcanic eruptions, meteoric impacts, or onshore slope failures can cause this displacement. Tsunami waves can travel at speeds averaging 450 to 600 miles per hour. As a tsunami nears the coastline, its speed diminishes, its wavelength decreases, and its height increases greatly. After a major earthquake or other tsunami-inducing activity occurs, a tsunami could reach the shore within a few minutes. One coastal community may experience no damaging waves while another may experience very destructive waves. Some low-lying areas could experience severe inland inundation of water and deposition of debris more than 3,000 feet inland. Historically the impact of Tsunamis on the San Diego County coastline has been low, but inundation maps developed by the California Office of Emergency Services and the California Geologic Survey show the potential for moderate damage along low-lying areas. The California Geologic Survey has developed Tsunami Inundation maps that can be found at: http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps.

A flood occurs when excess water from snowmelt, rainfall, or storm surge accumulates and overflows onto a river's bank or to adjacent floodplains. Floodplains are lowlands adjacent to rivers, lakes, and oceans that are subject to recurring floods. Most injuries and deaths from flood

occur when people are swept away by flood currents, and property damage typically occurs as a result of inundation by sediment-filled water.

Several factors determine the severity of floods, including rainfall intensity and duration. A large amount of rainfall over a short time span can result in flash flood conditions. A sudden thunderstorm or heavy rain, dam failure, or sudden spills can cause flash flooding. The National Weather Service's definition of a flash flood is a flood occurring in a watershed where the time of travel of the peak of flow from one end of the watershed to the other is less than six hours.

There are no watersheds in San Diego County that have a longer response time than six hours. In this county, flash floods range from the stereotypical wall of water to a gradually rising stream. The central and eastern portions of San Diego County are most susceptible to flash floods where mountain canyons, dry creek beds, and high deserts are the prevailing terrain.

Disaster History

In January and February 1983, the strongest-ever El Nino-driven coastal storms caused over 116 million dollars in beach and coastal damage, at this time the City of Solana Beach was not incorporated as a city. Thirty-three homes were destroyed, and 3,900 homes and businesses were damaged. As stated in the San Diego County Base Plan, other coastal storms that caused notable damage were during the El Nino winters of 1977-1978 and 1997-1998 and 2003-2004. Other Proclamations occurred in December 2010, July 2015, and February 2017. The City of San Diego proclaimed for winter storms in 2013.

Wave heights and run-up elevations from tsunami along the San Diego County Coast have historically fallen within the normal range of the tides (Joy 1968). The largest tsunami effect recorded in San Diego County since 1950 was May 22, 1960, which had a maximum wave height 2.1 feet (NOAA, 1993). In this event, 80 meters of dock were destroyed, and a barge sunk in Quivera Basin.

Other tsunamis felt in San Diego County occurred on November 5, 1952, with a wave height of 2.3 feet and caused by an earthquake in Kamchatka; March 9, 1957, with a wave height of 1.5 feet; May 22, 1960, at 2.1 feet; March 27, 1964 with a wave height of 3.7 feet, February 2010 with a wave height of 0.6 meters; June, 2011 with wave height of 2 feet; and January 15, 2022 with a wave height of 1-3 feet.

It should be noted that damage does not necessarily occur in direct relationship to wave height, illustrated by the fact that the damages caused by the 2.1-foot wave height in 1960 were worse than damages caused by several other tsunamis with higher wave heights.

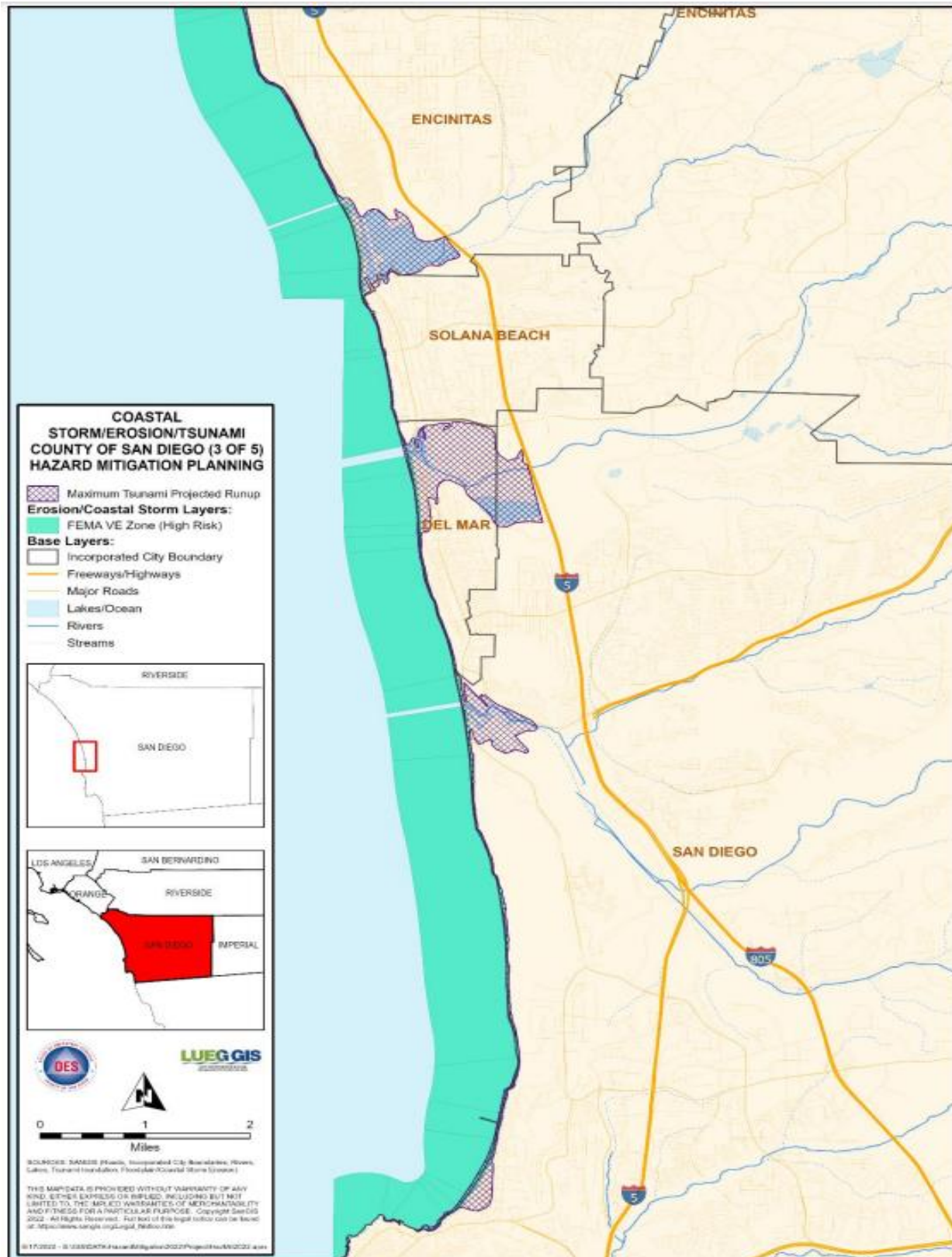
The California Tsunami Program, led by the California Governor's Office of Emergency Services (Cal OES) and the California Geological Survey (CGS), is responsible for updating the State's Tsunami Hazard Area Maps for emergency response planning and public safety. Communities use the State tsunami maps to develop and update their evacuation maps and plans. The State is constantly evaluating tsunami events, sources, and analysis techniques to ensure that coastal communities are safe from tsunami hazards.

The State has updated previous 2009 Tsunami Inundation Maps by working with local emergency management officials and Cal OES. Each County provides important considerations to CGS' decision on the inland boundaries of the Tsunami Hazard Area.

The State tsunami website (www.tsunami.ca.gov), includes new Tsunami Hazard Area maps/data available to view and download using easy-to-use, interactive web applications. Find a location by typing in an address or use a current location to pinpoint the location on the Tsunami Hazard Map. This is useful to find out if you are in a Tsunami Hazard Area wherever you live, work, or visit. As local tsunami evacuation brochures are developed, they will also be added to the online map interface.

Location & Extent/Probability of Occurrence & Magnitude

The figures below display the locations and extent of tsunami, coastal storm, erosion and sea level rise hazard areas for the City of Solana Beach as prepared by County of San Diego. As shown in these figures, the City of Solana Beach are in the highest risk zones in San Diego County located within the coastal zone of San Diego County. Coastal storm hazards are most likely during El Nino events:



**Figure 12: Map of San Diego County Coastal Storm/Erosion/Tsunami Hazard Areas – Incorporated from San Diego County’s Base Plan*

Maximum wind speeds along the coast are not expected to exceed 60 miles per hour, resulting in only minor wind-speed related damage. Coastal erosion risk is highest where geologically unstable cliffs become over-saturated by irrigation or rainwater. The greatest type of tsunami risk is material damage to small watercraft, harbors, and some waterfront structures (Joy 1968), with flooding along the coast, as shown in the run-up projections on the figure below.

The risk of damage from sea level rise is considered somewhat “Likely” with the risk of damage from coastal erosion considered to be “Likely” but flood and tsunami are both “Unlikely”.

Data used to profile this group of hazards included the digitized flood zones from the FEMA FIRM Flood maps, NOAA historical shoreline data, and Caltrans’ coastal zone boundary for the coastal storm/erosion hazard. Maximum tsunami run up projections modeled by the University of Southern California and distributed by the California Office of Emergency Services were used for identifying tsunami hazard. The tsunami model was the result of a combination of inundation modeling and onsite surveys and shows maximum projected inundation levels from tsunamis along the entire coast of San Diego County.

NOAA historical tsunami effects data were also used, which showed locations where tsunami effects have been felt, and when available, details describing size and location of earthquakes that caused the tsunamis. The Shoreline Erosion Assessment and Atlas of the San Diego Region Volumes I and II (SANDAG, 1992) were reviewed for the shoreline erosion category. This publication shows erosion risk levels of high, moderate, and low for the entire coastline of San Diego County.

For modeling purposes, the VE Zone of the FEMA FIRM map series was used as the high hazard value for coastal storms and coastal erosion. The VE Zone is defined by FEMA as the coastal area subject to a velocity hazard (wave action). Coastal storm and erosion risk were determined to be high if areas were found within the VE zone of the FEMA FIRM maps. Tsunami hazard risk levels were determined to be high if an area was within the maximum projected tsunami run-up and inundation area.

FEMA FIRM data was used to determine hazard risk for floods in the County of San Diego. FEMA defines flood risk primarily by a 100-year flood zone, which is applied to those areas with a 1% chance, on average, of flooding in any given year. Any area that lies within the FEMA-designated 100-year floodplain is designated as high risk. Any area found in the 500- year floodplain is designated at low risk. Base flood elevations (BFE) were also used in the HAZUS-MH modeling process. A BFE is the elevation of the water surface resulting from a flood that has a 1% chance of occurring in any given year (i.e. the height of the base flood).

The figure below displays the location and extent of flood hazard areas for the County of San Diego.

As shown, high hazard (100-year floodway) zones in San Diego County are generally concentrated within the coastal areas, including bays, coastal inlets, and estuaries. Major watershed areas connecting the local mountain range to the coastal region, where flash floods are more common, show several 100-year flood hazard areas.

Based on FEMA records, there have been numerous repetitive losses (losses of at least \$1,000 each) in San Diego County. These losses are provided in the table below:

Jurisdiction	Number of Repetitive Losses	Jurisdiction	Number of Repetitive Losses	Jurisdiction	Number of Repetitive Losses
Carlsbad	1	Chula Vista	1	Coronado	1
Del Mar	16	El Cajon	2	Encinitas	2
Escondido	2	Imperial Beach	5	La Mesa	2
Lemon Grove	0	National City	4	Oceanside	20
Poway	8	San Diego	53	San Marcos	1
Santee	1	Solana Beach	6	Vista	1
County of San Diego	40				

**Table 14: Repetitive Loss Due to Floods In San Diego County – incorporated from County of San Diego Base Plan.*

Based on historical occurrences, the potential for a rising or high-water event is considered “Likely”.

Climate Change Considerations

The most extreme events are going to become more extreme regarding climate change effects. These events are primarily atmospheric rivers and will become more so in the future based on global climate models (Gershunov et al., 2019). In addition, the increase in sea level increases the potential for severe flooding caused by the occurrence of coastal and inland flooding. Coastal flooding can cause pollution of coastal waters (Aguilera et al., 2019).

The highest priority mitigation actions to reduce Climate Change impacts on this hazard should include preparation, with strong attention to weather forecasts, assessing infrastructure flooding vulnerability, and developing plans to mitigate flood severity and frequency.

5.2.6 Wildfire

Nature of the Hazard

A wildfire is an uncontrolled fire spreading through vegetative fuels and exposing or possibly consuming structures. They often begin unnoticed and spread quickly. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires.

A wildfire is in a wildland area in which development is essentially nonexistent—except for roads, railroads, power lines and similar facilities. An Urban-Wildland/Urban Interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels. Significant development in San Diego County is located along canyon

ridges at the wildland/urban interface. Areas that have experienced prolonged droughts or are excessively dry are at risk of wildfires.

People start more than 80 percent of wildfires, usually as debris burns, arson, or carelessness. Lightning strikes are the next leading cause of wildfires. Wildfire behavior is based on three primary factors: fuel, topography, and weather. The type, and amount of fuel, as well as its burning qualities and level of moisture affect wildfire potential and behavior.

The continuity of fuels, expressed in both horizontal and vertical components is also a determinant of wildfire potential and behavior. Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and shape of terrain can change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity, and wind (both short and long term) affect the severity and duration of wildfires.

San Diego County's topography consists of a semi-arid coastal plain and rolling highlands which, when fueled by shrub overgrowth, occasional Santa Ana winds and high temperatures, creates an ever-present threat of wildland fire. Extreme weather conditions such as high temperature, low humidity, and/or winds of extraordinary force may cause an ordinary fire to expand into one of massive proportions.

Large fires would have several indirect effects beyond those that a smaller, more localized fire would create. These may include air quality and health issues, road closures, business closures, and others that increase the potential losses that can occur from this hazard. Modeling for a larger type of fire would be difficult, but the consequences of the three largest San Diego fires this century (October, 2003, October 2007 and May 2014) should be used as a guide for fire planning and mitigation.

Disaster History

The City of Solana Beach does not have specific disaster history for wildfire, however has chosen to incorporate the County of San Diego's disaster history as identified in the County's base plan.

San Diego County's third worst wildfire in history, known as the Laguna Fire, destroyed thousands of acres in the backcountry in September of 1970. The fire resulted in the loss or destruction of 383 homes and 1,200 other structures.

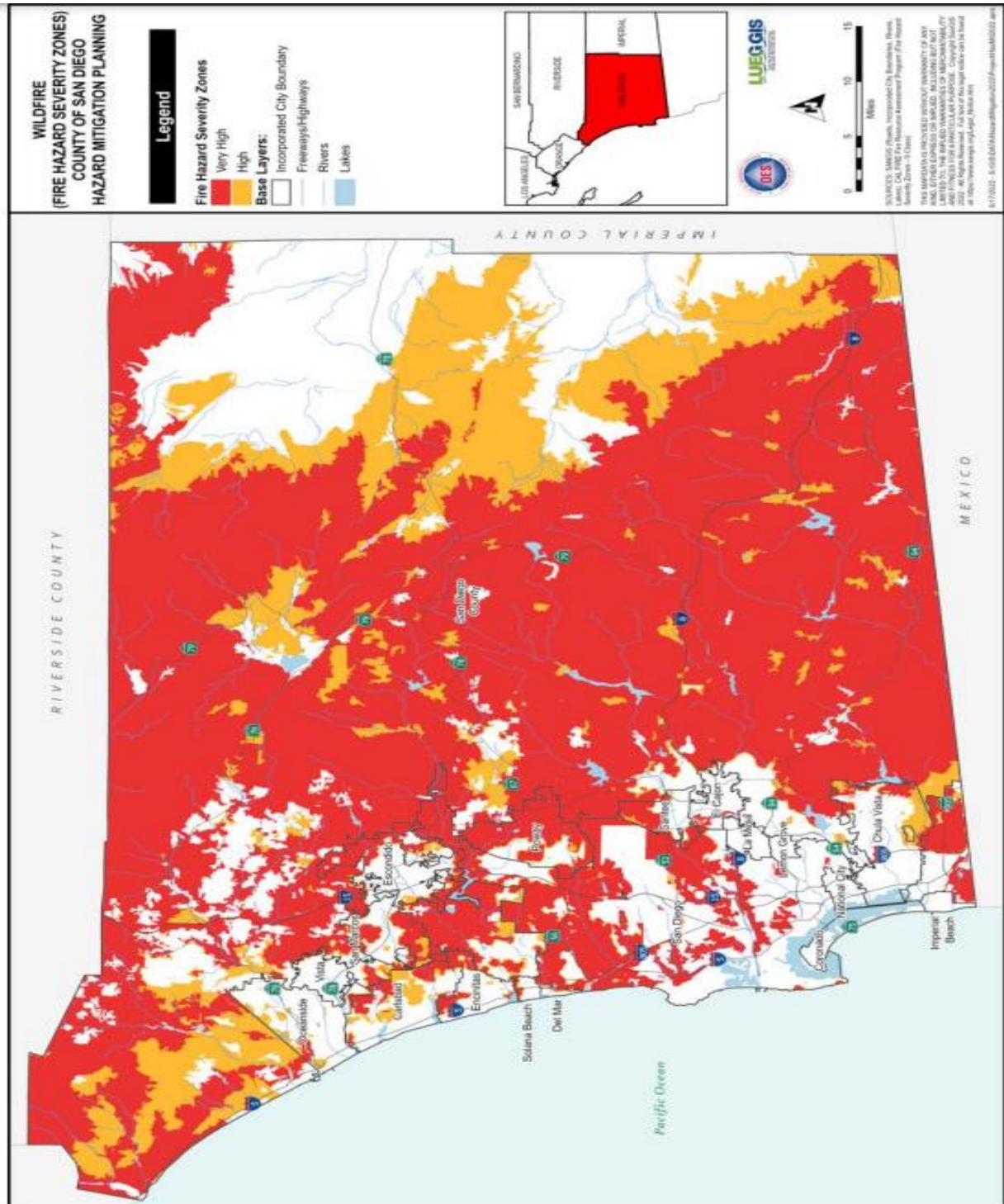
In October 2003, the second-worse wild-land fire in the history of San Diego County destroyed 332,766 acres of land, 3,239 structures and 17 deaths at a cost of approximately \$450M.

San Diego County's worst wildfire occurred in October 2007. At the height of the firestorm there were seven fires burning within the County. The fires destroyed 369,000 acres (13% of the County), 2,670 structures, 239 vehicles, and two commercial properties. There were 10 civilian deaths, 23 civilian injuries and 10 firefighter injuries. The cost of fire exceeded \$1.5 billion.

Wildland fires prompted seven (7) Proclaimed States of Emergency, and Urban/Intermix Fires prompted four (4) Proclaimed States of Emergency in the County of San Diego between 1950-2020.

Location & Extent/Probability of Occurrence & Magnitude

The wildfire maps use the CAL Fire Resource Assessment Program data for Fire Hazard Severity Zones.



**Figure 18: CAL FIRE Fire Hazard Severity Zones (High and Very High) – Incorporated from San Diego County Base Plan.*

Under current climate conditions, the wildfire threat to property, lives, and ecosystems in the San Diego region is very high. With hotter temperatures and possibly fewer rainy days in the coming decades, vegetation could become drier. As a result, it is likely that San Diego region will see an increase in the frequency and intensity of fires, making the region more vulnerable to devastating fires like the ones seen in 2003 and 2007. The fire season could also become longer and less predictable, making firefighting efforts more costly.

Building density is also a factor in potential building loss during a wildfire. A recent study in the Ecological Society of America's publication *Ecological Applications* indicates that the area of the building clusters, the number of buildings in the cluster and building dispersion all contribute to the potential for building loss. While all three factors had a positive influence on the number of structures lost, larger building structures were most strongly associated with building loss. The most likely reason being that more buildings are exposed. Two other top factors were the number of buildings in the cluster and the distance to the nearest building. In the Mediterranean California model the closer the buildings were to each other the less likely they were to be affected.

An increase in wildfire also impacts public health. Fire-related injuries and death are likely to increase as wildfires occur more frequently.¹²⁴ Wildfires can also be a significant contributor to air pollution. Wildfire smoke contains numerous toxic and hazardous pollutants that are dangerous to breath and can worsen lung disease and other respiratory conditions.

The potential for a wildfire in the City of Solana Beach is considered "Likely".

6. SECTION SIX: DEVELOP A MITIGATION STRATEGY

The mitigation strategy serves as the long-term blueprint for reducing potential losses identified in the risk assessment. It describes how Solana Beach will accomplish the overall purpose, or mission, of the planning process.

The mitigation strategy is made up of three main required components: mitigation goals, mitigation actions, and an action plan for implementation. These provide the framework to identify, prioritize, and implement actions to reduce risk to hazards.

Mitigation goals are general guidelines that explain what the community wants to achieve with the plan. They are usually broad policy-type statements that are long-term, and they represent visions for reducing or avoiding losses from the identified hazards

Mitigation actions are specific projects and activities that help achieve the goals.

The action plan describes how the mitigation actions will be implemented, including how those actions will be prioritized, administered, and incorporated into the community's existing planning mechanisms. In a multi-jurisdictional plan, each jurisdiction must have an action plan specific to that jurisdiction and its vulnerabilities.

Although not required, some communities choose to develop **objectives** to help define or organize mitigation actions. Objectives are broader than specific actions, but are measurable, unlike goals. Objectives connect goals with the actual mitigation actions

6.1. Mitigation Action Evaluation

The Solana Beach Planning Team used FEMA Worksheet 6.1 to help evaluate and prioritize each mitigation action being considered by the planning team. For each action, the potential benefits and/or likelihood of successful implementation were considered for the criteria defined below.

Each of the criteria was ranked with a -1, 0 or 1 using the following scale:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible

Example Evaluation Criteria:

- **Life Safety** – How effective will the action be at protecting lives and preventing injuries?
- **Property Protection** – How significant will the action be at eliminating or reducing damage to structures and infrastructure?
- **Technical** – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.

- **Political** – Is there overall public support for the mitigation action? Is there the political will to support it?
- **Legal** – Does the community have the authority to implement the action?
- **Environmental** – What are the potential environmental impacts of the action? Will it comply with environmental regulations?
- **Social** – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?
- **Administrative** – Does the community have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?
- **Local Champion** – Is there a strong advocate for the action or project among local departments and agencies that will support the action’s implementation?
- **Other Community Objectives** – Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of the comprehensive plan?

Mitigation Action/ Total Score	Life Safety	Property Protection	Tech	Political	Legal	Env	Social	Admini- strative	Local Champion	Other Objectives
Local Plans and Regulations										
Require residents to create defensible space around their homes.										
10	1	1	1	1	1	1	0	1	1	1
Require the use of fire-resistant roof structures (Class A Roof) for all new development and redevelopment projects that are subject to a Development Review Permit.										
8	1	1	1	1	1	1	0	0	0	1
Require drought tolerant and native landscaping for new development and redevelopment projects										
7	0	0	1	1	1	1	0	0	1	1
Require the installation of an automatic fire sprinkler system for all new development and redevelopment projects that are subject to a Development Review Permit.										
6	1	1	1	0	1	0	0	1	0	1
Adopt green infrastructure (Low Impact Development) guidance/strategies for the City.										
7	0	0	1	1	1	1	0	0	1	1
Structure and Infrastructure Projects										
Utilize permeable and pervious pavement options for City projects										
8	0	0	1	1	1	1	0	1	1	1

Mitigation Action/ Total Score	Life Safety	Property Protection	Tech	Political	Legal	Env	Social	Admini strative	Local Champion	Other Objectives
Properly maintain flood channels and creeks to permit proper drainage and reduce flood risks.										
9	1	1	1	1	1	1	0	0	1	1
Increase City tree canopy										
7	0	0	1	1	1	1	0	0	1	1
<u>Natural Systems Protection</u>										
Remove dead and dying municipal trees and replace with more drought tolerant and/or native species.										
8	1	1	1	1	1	1	0	0	0	1
Implement and expand upon the short- and long-term sediment management programs identified in the Solana Beach & Encinitas Coastal Storm Damage Reduction. As a part of this process both continue to pursue federal funding and examine other funding mechanisms for beach replenishment, e.g., special taxes or bonds.										
5	1	1	1	0	1	1	0	-1	0	1
Continue to authorize and utilize the Sand Compatibility and Opportunistic Use Program (SCOUP) to replenish the local beaches with beach quality sand from development projects.										
6	1	1	1	1	1	1	0	-1	0	1
<u>Education and Awareness Programs</u>										
Educate residents about the creation of defensible space around their homes.										
7	1	1	1	1	1	1	1	-1	0	1
Develop fire prevention materials to be placed on the City's website and disseminated at City events.										
5	0	1	1	1	1	0	0	0	0	1
Conduct fire prevention presentations at community groups such as Homeowner Association (HOA) meetings and at City Council meetings.										
4	0	0	1	1	1	0	0	0	0	1

TABLE 9: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 6.1 DATA.

6.2. Mitigation Action Implementation

The Planning Team has developed the four overarching goals to reduce vulnerability to threats and hazards form the core of the plan and are a key outcome of the planning process. The goals include a list of objectives and actions for those goals. Each action has also been assigned to a City Department who will have the responsibility to implement the action. The timeline for all the actions will extend five years from 2023 until the next Hazard Mitigation Plan update in 2028.

The City does not use this Hazard Mitigation Plan to create prospective budgets for the actions identified here. Instead, the City Council develops a Work Plan annually and all prioritized City actions or projects for that year are considered for inclusion in the current fiscal budget at which time scope and costs are more carefully considered. For more information on potential funding sources and grants for mitigation actions, please see the County of San Diego Multi-jurisdictional Hazard Mitigation Base Plan, Section 6.2.

❖ Goal 1: Mitigate the threat of wildfires.

- **Objective 1:** Increase fire resistance through landscaping on public and private property.
 - **Action:** Require and educate residents about the creation of defensible space around their homes. **Department: Community Development and Fire Safety**
 - **Action:** Remove dead and dying municipal trees and replace with more drought tolerant and/or native species. **Department: Engineering and Public Works**
 - **Potential Funding Source(s):** General Fund
 - **Timeline:** January 2023 – January 2028
- **Objective 2:** Increase the use of fire-resistant building materials in private development.
 - **Action:** Require the use of fire-resistant roof structures (Class A Roof) for all new development and redevelopment projects that are subject to a Development Review Permit. **Department: Community Development**
 - **Action:** Require the installation of an automatic fire sprinkler system for all new development and redevelopment projects that are subject to a Development Review Permit. **Department: Community Development**
 - **Potential Funding Source(s):** General Fund and Grants
 - **Timeline:** January 2023 – January 2028
- **Objective 3:** Educate the public on fire prevention and preparedness including 1) mitigation strategies to reduce loss of life, property damage, and impacts to natural resources, 2) evacuations and early warning systems, 3) large animal evacuations, 4) fuel/vegetation management; 5) hardening of structures and 6) ignition source reductions.
 - **Action:** Develop educational materials to be placed on the City’s website and disseminated at City events. **Department: Fire Safety**

- **Action:** Conduct educational presentations at community groups such as Homeowner Association (HOA) meetings and at City Council meetings. **Department: Fire Safety**
 - **Potential Funding Source(s):** General Fund and Grants
 - **Timeline:** January 2023 – January 2028
- ❖ **Goal 2: Increase the use of green infrastructure practices to mitigate erosion/landslide, rising or high-water events, extreme heat effects, drought, and wildfire risk.**
- **Objective 1:** Implement green infrastructure additions as part of City projects.
 - **Action:** Increase City tree canopy and require drought tolerant and native landscaping for new development and redevelopment projects. **Department: Engineering & Public Works, Community Development.**
 - **Action:** Utilize permeable and pervious pavement options. **Department: Engineering**
 - **Action:** Adopt green infrastructure (Low Impact Development) guidance/strategies for the City. **Department: Engineering and Community Development**
 - **Action:** Properly maintain flood channels and creeks to permit proper drainage and reduce flood risks during rising or high-water events. **Department: Engineering and Public Works**
 - **Potential Funding Source(s):** General Fund and Grants
 - **Timeline:** January 2023 – January 2028
 - **Objective 2:** Protect and restore native habitat and ecosystem functioning and encourage the use of native landscaping.
 - **Action:** Plant pollinator vegetation on public property. **Department: Engineering & Public Works**
 - **Action:** Partner with local community groups to purchase pollinator plants to distribute to the community to encourage the use on private property. **Department: Engineering & Public Works**
 - **Action:** Require the planting of only native, drought tolerant landscaping at all City projects and facilities. **Department: Community Development**
 - **Potential Funding Source(s):** General Fund and Grants
 - **Timeline:** January 2023 – January 2028

❖ **Goal 3: Mitigate rising or high-water events through beach replenishment and restoration.**

- **Objective 1:** Implement and expand upon the short- and long-term sediment management programs identified in the Solana Beach & Encinitas Coastal Storm Damage Reduction.
 - **Action:** As a part of this process both continue to pursue federal funding and examine other funding mechanisms for beach replenishment, e.g., special taxes or bonds. **Department: Community Development**
 - **Action:** Continue to authorize and utilize the Sand Compatibility and Opportunistic Use Program (SCOUP) to replenish the local beaches with beach quality sand from development projects. **Department: Community Development**
 - **Potential Funding Source(s):** General Fund and Grants
 - **Timeline:** January 2023 – January 2028

❖ **Goal 4: Mitigate the threat of earthquakes.**

- **Objective 1:** Continue to develop a comprehensive approach to reducing the possibility of damage and losses due to earthquake.
 - **Action:** Adopt, enforce, and update building code provisions to reduce earthquake damage risk. **Department: Community Development and Fire Safety**
 - **Action:** Incorporate structural and non-structural seismic strengthening actions into ongoing building plans and activities in the capital improvement plan to ensure that facilities remain operation and prepared in the event of earthquake. **Department: Community Development, Engineering and Fire Safety**
 - **Action:** Monitor existing protective measures to assure continued improvement and effectiveness in addressing the effects of earthquakes on local land mass and infrastructure. **Department: Community Development, Engineering and Fire Safety**
 - **Potential Funding Source(s):** General Fund
 - **Timeline:** January 2023 – January 2028
- **Objective 2:** Protect existing assets with the highest relative vulnerability to the effects of earthquakes.
 - **Action:** Maintain inventory of public and commercial buildings that may be particularly vulnerable to earthquake damage, including pre-1940 homes and homes with cripple wall foundations. **Department: Community Development**
 - **Action:** Explore options for conducting seismic retrofitting for critical public facilities most at risk to earthquakes. **Department: Engineering and Public Works**

- **Action:** Wherever feasible, land uses and buildings that are determined to be unsafe from earthquake shall be mitigated, discontinued, removed, and/or relocated. **Department: Engineering and Community Development**
- **Potential Funding Source(s):** General Fund and Grants
- **Timeline:** January 2023 – January 2028
- **Objective 3:** Educate employees and the public on earthquakes and preparedness including 1) mitigation strategies to reduce loss of life, property damage, and impacts to natural resources, 2) evacuations, and 3) hardening of structures.
 - **Action:** Participate in yearly “Great Shakeout” drills to test employees preparedness. **Department: Fire Safety**
 - **Action:** Develop educational materials to be placed on the City’s website and disseminated at City events. **Department: Fire Safety**
 - **Action:** Conduct educational presentations at community groups such as Homeowner Association (HOA) meetings and at City Council meetings. **Department: Fire Safety**
 - **Potential Funding Source(s):** General Fund and Grants
 - **Timeline:** January 2023 – January 2028

7. SECTION SEVEN: KEEP THE PLAN CURRENT

Hazard Mitigation Plan maintenance is the process the planning team establishes to track the plan's implementation progress and to inform the plan update. The plan must include a description of the method and schedule for monitoring, evaluating, and updating it within a 5-year cycle. These procedures help to:

- Ensure that the mitigation strategy is implemented according to the plan.
- Provide the foundation for an ongoing mitigation program in your community.
- Standardize long-term monitoring of hazard-related activities.
- Integrate mitigation principles into community officials' daily job responsibilities and department roles.
- Maintain momentum through continued engagement and accountability in the plan's progress.

Hazard Mitigation Plan updates provide the opportunity to consider how well the procedures established in the previously approved plan worked and revise them as needed. This annex is part of the most recent *San Diego County Multi-Jurisdictional Hazard Mitigation Plan* update. The plan was last updated in 2018. See the *San Diego County Multi-Jurisdictional Hazard Mitigation Plan* for more information.

7.1. Mitigation Action Progress

Plan monitoring means tracking the implementation of the plan over time. The City participated in the development of the San Diego County Multi-Jurisdictional Hazard Plan in 2018. However, the City has other Plans and mechanisms it draws upon to monitor progress on various hazard mitigation efforts including the General Plan; the Climate Action Plan including a Climate Adaptation Chapter; and the City's Annual Work Plan. The City drew upon these in developing the 2018 Plan and active monitoring and implementation of those plans occurs on a regular basis through processes outside the 5-year Hazard Mitigation Planning cycle. The 2022 Planning Team reviewed the actions listed in 2018.

Below are progress reports for the ten priority mitigation actions listed in the 2018 Plan:

- 1. Action:** Develop a comprehensive approach to reducing the possibility of damage and losses due to geological hazards. Continue to explore strategies and opportunities for future sand replenishment. Adopt Local Coastal Program (LCP) Land Use Plan (LUP).

Progress Report Period: January 2018 to January 2022

Responsible Department: Community Development

Status: Completed and On-going

Explanation: This action remains on-going and was incorporated into the latest HMP.

Summary: During the reporting period, the City incorporated sand replenishment efforts into new development projects in the City. These actions allowed development sites to transport sand to the beach during the excavation process. This action continues to be a priority for the City.

This action is still considered relevant, and revision/ update is ongoing. The mention of this action item within the updated MJHMP has been included in the Goals of the current HMP. This project is planned to continue and be re-evaluated each year.

2. **Action:** Protect existing assets with the highest relative vulnerability to the effects of geological hazards. In addition to the adoption of the LCP LUP, continue efforts to develop other coastal bluff policies to address bluff protection measures. Monitor existing protective measures taken to assure their continued effectiveness.

Progress Report Period: January 2018 to January 2022

Responsible Department: Community Development

Status: Completed and On-going

Explanation: Action has been completed and is also an on-going effort/action.

Summary: Coastal bluffs continue to be monitored on a daily basis. Additionally, the City installed cameras to continue to monitor the bluffs and geological hazards. Coastal bluff policies are reviewed annually and continue to be adapted.

The LCP LUP has been worked on but has not been certified. Due to COVID-19 priorities for the City had to adjust. However, this action is still considered relevant, and revision/ update is ongoing. The mention of this action item within the updated MJHMP has been included in the Goals of the current HMP. This project is planned to continue and be re-evaluated each year.

3. **Action:** Coordinate with and support existing efforts to mitigate wildfire hazards (e.g., County or San Diego and State of California). Develop mitigation measures to enhance protection of homes along San Elijo Reserve. Work in conjunction and cooperation with San Elijo Lagoon Conservancy to achieve mitigation efforts. Coordinate with other agencies to ensure consistency among standards.

Progress Report Period: January 2018 to January 2022

Responsible Department: Fire Department

Status: Completed and On-going

Explanation: Action has been completed and is also an on-going effort/action.

Summary: The City of Solana Beach Fire Department completed annual fire inspections and brush clearing to support mitigating efforts for wildfire hazards.

Due to COVID-19, priorities and employee safety had to adjust for the City. The City had to adapt its annual fire inspection process, but continued its efforts. This action is still considered relevant, and revision/ update is ongoing. The mention of this action item within the updated MJHMP has been included in the Goals of the current HMP. This project is planned to continue and be re-evaluated each year.

4. **Action:** Upgrade to Next Generation Regional Communications System (RCS). The RCS was placed in service in 1998 and is approaching the end of its useful life, after which the County will no longer be able to support and maintain the system. The Next Generation RCS will provide improved communication capabilities.

Progress Report Period: January 2018 to January 2022

Responsible Department: City Manager's Office

Status: Completed

Explanation: This project was completed during the last HMP period.

5. **Action:** Develop a comprehensive approach to reducing the possibility of damage and losses due to other manmade hazards. Coordinate with other agencies on training and planning for terrorist-related activities. Maintain communication links with regards to threat assessments and dissemination of information.

Progress Report Period: January 2018 to January 2022

Responsible Department: Fire Department

Status: Completed and On-going

Explanation: Action has been completed and is also an on-going effort/action.

Summary: The City of Solana Beach engaged with the Sheriff's department for a threat assessment of our City facilities. The City worked with the Sheriff's department for training of employees regarding potential terrorist related activities.

Due to importance of this action the City continues to maintain communication links with regards to threat assessments and dissemination of information.

6. **Action:** Address identified data limitations regarding the relative vulnerability of assets from floods. Use available information to share and train with inundation maps with all City departments and personnel. Coordinate with the Cities of Del Mar and Encinitas for joint training opportunities between staffs.

Progress Report Period: January 2018 to January 2022

Responsible Department: Engineering and Public Works

Status: Completed and On-going

Explanation: This action was completed and is also an on-going effort/action.

Summary: During the last reporting period, the City of Solana Beach updated its FEMA Flood Map plans to address the identified data limitations regarding the relative vulnerability of assets from floods. These flood maps were further incorporated into the created Climate Action Plan after an assessment of the flood vulnerability mitigation.

Additionally, efforts were made to work with Cities of Del Mar and Encinitas when assessing the flood vulnerabilities. The City of Solana Beach continues to assess the relative vulnerability of assets from floods.

7. **Action:** Protect existing assets with the highest relative vulnerability to the effects of other manmade hazards. Evaluate access levels to public facilities and restrict access where necessary. Evaluate infrastructure and facilities for additional security measures as required

Progress Report Period: January 2018 to January 2022

Responsible Department: City Manager

Status: Completed and On-going

Explanation: This action was completed and is also an on-going effort/action

Summary: The City of Solana Beach continues to assess existing assets with the highest relative vulnerability to the effects of other manmade hazards. During COVID-19 pandemic this priority was incorporated into the additional measures the City took to protect employees and the public.

This action is still considered relevant, and revision/ update is ongoing. This project is planned to continue and be evaluated each year.

8. **Action:** Monitor and publicize the effectiveness of mitigation actions implemented locally. Utilize City newsletter, press releases, and public meetings. Train and review with staff implemented programs as part of regular training.

Progress Report Period: January 2018 to January 2022

Responsible Department: City manager

Status: Completed and On-going

Explanation: This action was completed and is also an on-going effort/action

Summary: The City of Solana Beach continues to monitor and publicize mitigation actions and efforts implemented. The City utilizes e-newsletters, press releases and public meeting to disseminate information to the community.

This action is still considered relevant, and revision/ update is ongoing. This project is planned to continue and be evaluated each year.

- 9. Action:** Discourage activities that exacerbate hazardous conditions. Make hazard mitigation part of the planning and approval process. Develop a checklist and inspection follow up in the flood plain, wildland urban interface, and coastal bluff.

Progress Report Period: January 2018 to January 2022

Responsible Department: Community Development & Code Enforcement

Status: Completed and On-going

Explanation: This action was completed and is also an on-going effort/action

Summary: During the reporting period, the City integrated these efforts when updating building and fire codes. The approval process for new development takes into consideration hazard mitigation during the planning. Further, inspections are preformed by City staff to monitor the flood plain, wildland urban interface and coastal bluff. The City of Solana Beach has additionally restricted building in the wildland urban interface.

This action is still considered relevant, and revision/ update is ongoing. The mention of this action item within the updated MJHMP has been included in the Goals of the current HMP. This project is planned to continue and be re-evaluated each year.

- 10. Action:** Work with the Climate Action Commission to implement policies and programs that promote hazard mitigation measures relevant to the city's most vulnerable assets.

Progress Report Period: January 2018 to January 2022

Responsible Department: Fire Department

Status: Completed and On-going

Explanation: This action was completed and is also an on-going effort/action

Summary: During the reporting period, the City of Solana Beach's Climate Action Commission implemented policies and programs to promote hazard mitigation measures relevant to the city's most vulnerable assets.

This action is still considered relevant, and revision/ update is ongoing. This project is planned to continue and be re-evaluated each year.

To ensure improved Hazard Mitigation Plan action monitoring moving forward, the 2022 Planning has streamlined the Goals, Objectives, and Actions into items that are more easily measured and whose progress can be tracked more concretely throughout the current 5-year planning cycle.

7.2. Plan Update Evaluation

Plan Section	Considerations	Explanation
Planning Process	Should new jurisdictions and/or districts be invited to participate in future plan updates?	Yes, future plan updates should include any jurisdictions and /or districts that have or support critical infrastructure.
	Have any internal or external agencies been invaluable to the mitigation strategy?	Yes, the City Departments mentioned in this plan and the County Planning Team have been invaluable to the mitigation strategy developed.
	Can any procedures (e.g., meeting announcements, plan updates) be done differently or more efficiently?	Yes. In preparation for the 2028 update, streamlined worksheets outlining exactly what the state is looking for would make the process more efficient. Examples provided would also help ensure that agencies provide adequate information in the future.
	Has the Planning Team undertaken any public outreach activities?	No formal outreach with the community was done specific to the HMP. However, because many of these goals are incorporated into other plans the City works on, community outreach was done to gain community buy-in.
	How can public participation be improved?	The public participates in the City's other planning document processes. COVID-19 did impact public participation.
	Have there been any changes in public support and/or decision-maker priorities related to hazard mitigation?	No.
Capability Assessment	Have jurisdictions adopted new policies, plans, regulations, or reports that could be incorporated into this plan?	Yes, Climate Change Adaptation Chapter of the City's Climate Action Plan.
	Are there different or additional administrative, human, technical, and financial resources available for mitigation planning?	Not at this time, however the City is applying for grant funding to support its Sand Compatibility Opportunistic Use Program (SCOUP). Additionally, the City is working with lobbyists to get Federal funding for several mitigation action efforts.
	Are there different or new education and outreach programs and resources available for mitigation activities?	Not at this time.
	Has NFIP participation changed in the participating jurisdictions?	No.
	Has a natural and/or technical or human-caused disaster occurred?	Yes, the City has experienced several minor coastal bluff failures along the Solana Beach Bluffs since 2018 that impacted private property. .

Risk Assessment	Should the list of hazards addressed in the plan be modified?	No, the hazards identified in this plan are up to date and prioritized.
	Are there new data sources and/or additional maps and studies available? If so, what are they and what have they revealed? Should the information be incorporated into future plan updates?	No.
	Do any new critical facilities or infrastructure need to be added to the asset lists?	No.
	Have any changes in development trends occurred that could create additional risks?	No.
	Are there repetitive losses and/or severe repetitive losses to document?	Yes. Solana Beach has 7 repetitive losses and 3 severe repetitive losses as identified in Table 14 on page 89 of the County's Base Plan.

TABLE 10: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 7.2 DATA.

Plan Section	Considerations	Explanation
Mitigation Strategy	Is the mitigation strategy being implemented as anticipated? Were the cost and timeline estimates accurate?	Yes, however the City does not use the Hazard Mitigation Plan for City planning and budgeting purposes. Instead, the City uses its General Plan and annual Work Plan to implement strategies and estimate the costs. The City Council then uses these plans for the adoption of our two-year budget cycle.
	Should new mitigation actions be added to the Action Plan? Should existing mitigation actions be revised or eliminated from the plan?	No.
	Are there new obstacles that were not anticipated in the plan that will need to be considered in the next plan update?	No.
	Are there new funding sources to consider?	Yes, Federal infrastructure funding and potential State grant funding for Climate Action Planning and adaptation.
	Have elements of the plan been incorporated into other planning mechanisms?	No. We utilize our other planning mechanisms to complete this plan.
Plan Maintenance Procedures	Was the plan monitored and evaluated as anticipated?	Yes.
	What are needed improvements to the procedures?	None.

TABLE 11: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 7.2 DATA CONTINUED.

7.3 Plan Maintenance, Monitoring, Evaluation and Updates

Hazard Mitigation Plan maintenance is the process the Planning Team establishes to track the plan's implementation progress and to inform the plan update. The plan must include a description of the method and schedule for monitoring, evaluating, and updating it within a 5-year cycle. These procedures help to:

- Ensure that the mitigation strategy is implemented according to the plan.
- Provide the foundation for an ongoing mitigation program in your community.
- Standardize long-term monitoring of hazard-related activities.
- Integrate mitigation principles into community officials' daily job responsibilities and department roles.
- Maintain momentum through continued engagement and accountability in the plan's progress.

7.3.1 Plan Monitoring

Plan monitoring means tracking the implementation of the plan over time. The plan must identify how, when, and by whom the plan will be monitored.

The planning team participants will be responsible for monitoring the plan annually for updates to goals, objectives, and action items. The City Management department will be responsible for monitoring the plan and incorporating necessary updates on an annual basis.

At the end of the five-year cycle for hazard mitigation plans, planning participants will report on the status of mitigation projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and strategies that should be revised.

7.3.2 Plan Evaluation

The Plan is evaluated by the planning team annually to determine the effectiveness of programs, and to reflect changes in land development, policies, or programs that may affect mitigation priorities. This includes re-evaluation by project leads based upon the initial STAPLEE criteria used to draft goals, objectives, and action items. Planning team members also review the goals and action items to determine their relevance to changing situations in the city, as well as changes in State or Federal regulations and policy.

Planning team members also review the risk assessment portion of the plan to determine if this information should be updated or modified, given any new available data. The departments responsible for the various action items will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

Any updates or changes necessary will be forwarded to the City Management department for inclusion in further updates to the Plan.

7.3.3 Plan Updates

In the past five years, there has been progress made with the successful completion several action items developed in 2018. Section 7.1 details the status of the action items from the 2018 plan.

This review process has been effective in identifying gaps and shortfalls in funding, support, and other resources. It has also allowed for the re-prioritization of specific actions as circumstances change. It allows the hazard mitigation plan to be a living document. This review process has enabled the planning team to improve the document by eliminating actions that have been completed, adding new actions that have been identified since the plan's adoption and reprioritizing other actions to reflect new priorities and/or limitations.

The planning team will evaluate to progress of the goals, objectives, and actions on a annual basis, update them as necessary, and participate in a complete plan review and update process again in five years.

7.3.4 Implementing Through Existing Programs and Other Planning Mechanisms

Solana Beach has implemented, as indicated in sections above, the identified priority actions from the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).

Planning participants used (and will continue to use) this plan as a baseline of information related to priority hazards impacting their jurisdictions, to identify vulnerable communities and critical assets, and plan for their protection. The planning participants have also been able to refer to existing institutions, integrations, plans, policies, and ordinances defined for each jurisdiction, which was outlined in Section 2 of this plan (e.g., General Plan).

After regional adoption of this MJHMP update, the planning team will work to incorporate this plan into the General Plans and/or other comprehensive plans and procedures as those plans require review and revisions. The hazard mitigation plan can influence other City plans to focus on hazard mitigation activities and/or policies that support hazard mitigation. City plans that can be influenced by the hazard mitigation plan include but are not limited to:

EXISTING PLANS/EFFORTS	INTEGRATION WITH HAZARD MITIGATION
GENERAL PLAN	<p>The City of Solana Beach General Plan includes a Safety Element. Upon each revision of the city’s General Plan, the following sections are reviewed to ensure they account for existing hazards and new hazards within the community:</p> <ul style="list-style-type: none"> • Land Use and Transportation Element • Public Facilities and Services Element • Environmental Element • Growth Element. <p>Land use, land development, and transportation corridors must not exacerbate existing hazards or impinge on hazard areas. As the City continues to grow, the general plan guides the City’s growth and considers hazard impact on the community.</p> <p>Since the 2018 MJHMP the General Plan, specifically the Safety Element was updated to incorporate progress of local hazard mitigation efforts. Directors and plan leads met as needed to update the language for council approval.</p> <p>The MJHMP update reflects changes to the hazards facing Solana Beach and the programs that have been put in place to help minimize or eliminate these hazards. A key function of the Safety Element is the integration of the MJHMP updates to ensure compliance with California Government Code.</p>
EMERGENCY OPERATIONS PLAN	<p>The Emergency Operations Plan guides the city’s coordination of resources during emergency response. This plan is reviewed along with the Hazard Mitigation Plan to ensure the EOP is preparing for and addressing responses to all identified hazards.</p> <p>Hazard information from the MJHMP update was incorporated into the 2022 City of Solana Beach Emergency Operations Plan update. All high significance hazards identified in the MJHMP update were addressed in the 2022 EOP update.</p>
CLIMATE ACTION PLAN	<p>The City of Solana Beach’s Climate Action Plan adopted in 2017 and updated in 2020 incorporates and references data from the MJHMP as it pertains to climate change effects and vulnerability assessment.</p> <p>The Climate Action Plan has been under revision since 2022, and takes into consideration hazard information from this MJHMP.</p>
WORK PLAN (CAPITAL IMPROVEMENT PLANS) AND BUDGETS	<p>The City’s Work Plan which incorporates Capital Improvement Plans/ projects identify hazards referenced in the MJHMP where appropriate. The Work Plan is reviewed and updated annually, taking into consideration the most pressing hazards for the upcoming year. Further the budget is reviewed every 2 years, which also takes into consideration the Work Plan and need to fund projects to protect against the most pressing vulnerabilities/ hazards from the MJHMP.</p>

REGIONAL PLANNING EFFORTS	The city takes part in several San Diego County Operational Area planning efforts. The city should continue bringing the content and goals of the Hazard Mitigation Plan into future regional planning efforts, to include the OA Emergency Operations Plan and the next iteration of the Regional Hazard Mitigation Plan.
PUBLIC INFORMATION AND OUTREACHING PLANS	The jurisdictions' ongoing public education and outreach efforts should reflect the hazards and vulnerabilities described in this Plan. In addition to preparing for disasters, public education should include ways in which the public can reduce their vulnerability to natural and human caused hazards. Furthermore, mitigation activities and success stories should be communicated to the public to show the benefits of effective mitigation planning.

HMPG members involved in these other planning mechanisms will be responsible for integrating the findings and recommendations of this MJHMP with these other plans, programs, etc. as appropriate. As described in this section, incorporation into existing planning mechanisms will be done through routine action of:

- Monitoring other planning/program agendas.
- Attending other planning/program meetings.
- Participating in other planning processes.
- Monitoring community budget meetings for other community program opportunities.

7.3.5 Response Plans Integration Since 2018

During the performance period since adoption of the previous 2018 Hazard Mitigation Plan, the City of Solana Beach made progress on integrating hazard mitigation goals, objectives and actions into other planning initiatives. Several other operational or functional response plans are influenced by information contained in this plan. The following plans, currently integrate components of the 2018 hazard mitigation strategy:

- **General Plan – Safety Element**; the City of Solana Beach has a Safety Element in its General Plan that includes a discussion of earthquake, landslides, flooding, hazardous materials, fire, and aircraft hazards. The Hazard Mitigation Plan Annex was adopted as an implementation appendix to the Safety Element.
- **Certified Local Coastal Program 2019**; the Certified Local Coastal Program incorporated updated information on the hazards effecting the shorelines/bluff in Solana Beach, including erosion/bluff failures, 100-year flood maps, and Fire Hazard Severity Zone maps, in Chapter 4 – Hazards & Shorelines/Bluff Development.
- **Emergency Operation Plan**, including a review of the vulnerabilities and estimated losses detailed in the hazard profiles helped identify safety viability in different emergency scenarios.

These plans in turn informed this plan by helping the Planning Group evaluate the impacts of multiple or cascading hazards, so that evacuees are not relocated into an area that puts them at risk from other hazards.

7.3.6 Continued Public Involvement

The 2018 plan was posted on the hazard Mitigation page of the San Diego County Office of Emergency Services (County OES). The other various plans that integrate the HMP are posted on the City of Solana Beach's website and the public has always been encouraged to comment on the various plan updates mentioned in the above sections. Once approved, this revised plan will be posted on the Hazard Mitigation webpage of the County OES and City of Solana Beach website.

The participating jurisdictions and special districts continue to be dedicated to involving the public directly in the review process and updates of the plan. A maintenance committee made up of a representative from County OES and a representative from each participating jurisdiction is responsible for monitoring, evaluating, and updating the plan described above.

County OES will continue to be responsible for publicizing any changes to the plan and maintaining public involvement.